

Revision of the Australian Spider Genus *Habronestes* (Araneae: Zodariidae). Species of New South Wales and the Australian Capital Territory

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ABSTRACT. The genus *Habronestes* L. Koch, 1872 is revised for the species of New South Wales. The genus now contains 28 species Australia-wide, with 23 species recorded from New South Wales. *Habronestes bradleyi* (Pickard-Cambridge, 1869), *Habronestes macedonensis* (Hogg, 1900) and *Habronestes pictus* (L. Koch, 1865), are redescribed and 20 species are newly described as: *H. bicornis* n.sp., *H. driscollii* n.sp., *H. giganteus* n.sp., *H. grahami* n.sp., *H. hebroniae* n.sp., *H. helenae* n.sp., *H. hamatus* n.sp., *H. hunti* n.sp., *H. jocquei* n.sp., *H. longiconductor* n.sp., *H. grayi* n.sp., *H. minor* n.sp., *H. monocornis* n.sp., *H. piccolo* n.sp., *H. pseudoaustraliensis* n.sp., *H. ungari* n.sp., *H. raveni* n.sp., *H. rawlinsonae* n.sp., *H. weelahensis* n.sp., *H. wilkiei* n.sp. The species are divided between three species-groups, according to their eye configuration. A key is provided for the three groups as well as for the species.

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This systematic paper provides the first overview of the large, endemic Australian genus *Habronestes*. As a result of this review, *Habronestes* now contains 28 species, of which only eight were previously described.

This endemic genus is part of the predominantly tropical ant-eating and ant mimicking spider family Zodariidae, one of the most diverse spider families in Australia. They associate with ants and prefer them as food. Studies on *Habronestes bradleyi* (Pickard-Cambridge, 1869) have shown that these spiders not only mimic the body-shape and behaviour but also the pheromones of ants (Allan *et al.*, 1996). Like ants, *Habronestes* species are found mainly in semi-arid areas of Australia.

The genus contains about 80–100 species of small to medium-sized spiders (2.5–10.5 mm). This paper is the first part of the revision of the entire genus and deals only with the fauna of New South Wales and the Australian Capital Territory (ACT).

Material and methods

All descriptions are generated with the aid of Intkey (Dallwitz *et al.*, 1998) and shortened where possible. Epigynes were cleared in lactic acid. Different drawing methods and kinds of paper were experimented with to get best results for showing characters. Schoellershammer Zeichenpapier, 4G, glatt 250g/m, ref. 010915 and Staedtler omnichrom 108, black pencil and black ink Faber-Castel, seems to be the best combination (e.g., compare Figs. 119, 120—drawn with the aforementioned tools—with 117, 118). Drawings were taken from body, right palp, epigyne and vulva. All measurements are in mm. Detailed spination patterns of legs were not given but special (autapomorphic or synapomorphic) spination characters are mentioned. Colour patterns were described from spiders in alcohol. The white abdominal patches, mentioned in the descriptions,

can be yellow or orange in living spiders. The species are mainly named after the people who collected or recognized the species or in honour of experienced spider experts.

Abbreviations of used morphological terms and institutions from which material was borrowed are as follows:

ALE	anterior lateral eyes.
ALE–PLE	distance between anterior lateral and posterior lateral eyes
ALS	anterior lateral spinnerets
AM	Australian Museum (Sydney)
AME–ALE	distance between anterior median and anterior lateral eyes
AME	anterior median eyes
AME–AME	distance between anterior median eyes
cl/cw	carapace length/carapace width
DD	D. Driscoll (collector)
DTA	dorsal tegular apophysis
DTiA	dorsal tibial apophysis
G/C	Mike Gray and Gerry Cassis (collectors)
LTA	lateral tegular apophysis
MOQ	median ocular quadrangle
NMV	Museum Victoria, Melbourne (formerly National Museum of Victoria)
PLE	posterior lateral eyes
PLS	posterior lateral spinnerets
PME–PLE	distance between posterior median and posterior lateral eyes
PME	posterior median eyes
PME–PME	distance between posterior median eyes
PMS	posterior median spinnerets
QM	Queensland Museum, Brisbane
RCF	retrolateral cymbial fold
SA	South Australian Museum, Adelaide
SF	State Forest
sl/sw	sternum length/sternum width
VTA	ventral tegular apophysis
VTiA	ventral tibial apophysis
ZMH	Zoologisches Museum, Hamburg

Systematics

Type species. *Habronestes striatipes* L. Koch, 1872 by subsequent designation of Petrunkevitch (1928).

The genus *Habronestes* was first described by L. Koch (1872), but he did not designate a type species. Following R. Jocqué (1991), I agree that *H. striatipes* L. Koch, 1872 must be taken as the type species of *Habronestes*, because it is both the first described species in L. Koch (1872) and first mentioned as a type species by Petrunkevitch (1928). Rainbow (1911) did not designate a type species for *Habronestes* in his catalogue of the Australian Araneida because he listed only it in the synonymy of *Storena*. In contrast to the genus *Storena*, revised by Jocqué & Baehr (1992), all species of *Habronestes* have similar male palpal structure but different abdominal patterns.

The generic description of L. Koch (1872) contains only somatic characters, that are not unique to the genus. Nevertheless, he mentioned the sickle-shaped VTA of the *Habronestes bradleyi* male (1872: 306). According to Jocqué (1991), “the only sure diagnostic character is the Y-shaped tegulum of the male palp [= the sickle-shaped VTA], always combined with a large, lateral, cymbial fold [= the RCF]” (Figs. 1, 3, 5). A third synapomorphic character is the membranous DTA with long stalk and curled end covered with spicules (Figs. 2, 4, 6), that functions as a conductor.

The extremely different eye group patterns (Figs. 7–13) of the examined species suggest that they belong to three different species-groups. I prefer to divide the species into species-groups, rather than in new genera, because the main three synapomorphic characters—the sickle-shaped VTA, the deep retrolateral cymbial fold (RCF) and the membranous stalked DTA of the male palp—occur in all three groups and this suggests that the genus is monophyletic. In addition, all species possess two rows of short ventral spines on tarsi I–IV, a distoventral preening brush on metatarsi II, III and long, strong spines on tibiae and metatarsi III and IV, (hence, these characters are omitted from each species description). Whether all of these characters are synapomorphic for *Habronestes* can be only decided after all Australian zodariid species have been examined.

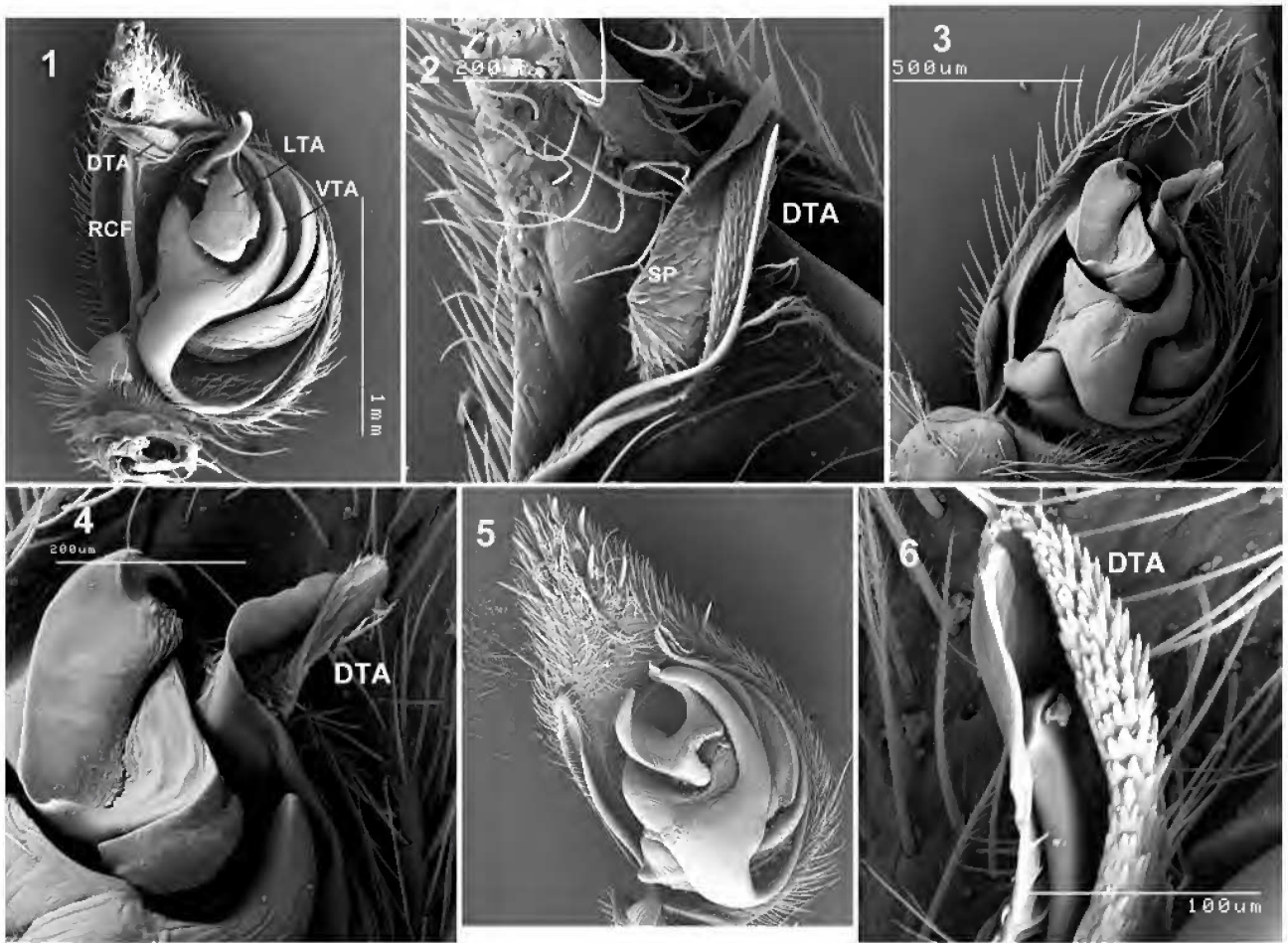
Further studies will show if it is necessary to split the genus as in the *Asteron*-complex (Baehr & Jocqué 1996, 2000, 2001; Jocqué & Baehr, 2001). Species-groups are here named after described species that represent each eye group pattern as: *Habronestes australiensis* species-group, *Habronestes macedonensis* species-group and *Habronestes pictus* species-group (Figs. 7–10). Palps of each group are shown in Figs. 1–6.

Genus *Habronestes* L. Koch

Habronestes L. Koch, 1872: 299; Jocqué, 1991: 56; Jocqué, 1995: 143.

Diagnosis. Cymbium with large, retrolateral fold (RCF); palp with sickle-shaped VTA; DTA with long stalk and curled end covered with spicules, which functions as a conductor. Tarsi I–IV with 2 rows of short stout ventral spines.

Description. Small to medium sized spiders, 2.50–10.50 mm body length. *Colour.* Carapace, sternum & chelicerae orange or sepia brown; maxillae, labium yellow or pale brown. Abdomen medium or sepia brown with 2–5 pairs of white patches on top and 1–3 single patches in front of spinnerets, laterally pale or sepia brown with 1 or 2 long horizontal white stripes, ventrally pale to sepia brown with or without longitudinal white stripe. Legs yellow or pale brown, clearly annulated or with indistinct colour pattern. *Carapace.* Oval; raised at front or not raised. *Sternum.* Heart-shaped, anterior margin straight. *Eyes.* In 3 rows, 2 4 2, or circular around AME. PLE largest being 2–3× diameter of AME, or AME largest, or all eyes subequal. *Clypeus & chilum.* Clypeus about 5–6× diameter of ALE. Chilum divided or undivided. *Mouthparts.* Chelicerae, basal segment with rows of hairs, bordering mesial margin, dorsally with a few hairs and bristles; maxillae triangular, with promarginal scopula; labium triangular. *Abdomen.* Oval; PLS close together; colulus tiny with some hairs; tracheal spiracle small, slit-like with sclerotized cover. *Legs.* Length formula 4123, 4312 or 4132; tarsi I–IV with 2 rows of short ventral spines; metatarsi II, III with distoventral preening brush; tibiae and metatarsi III, IV with long strong spines; 10–14 teeth on inner side of paired claws; 3rd claw on onychium (Fig. 51). *Male palp.* Cymbium with RCF occupying from half to whole of cymbium length; with weak dorsal scopula and a few strong spines apically. Tegulum LTA with stalk and irregular plate; DTA chitinous or membranous, with a thin or flattened stalk and a curled



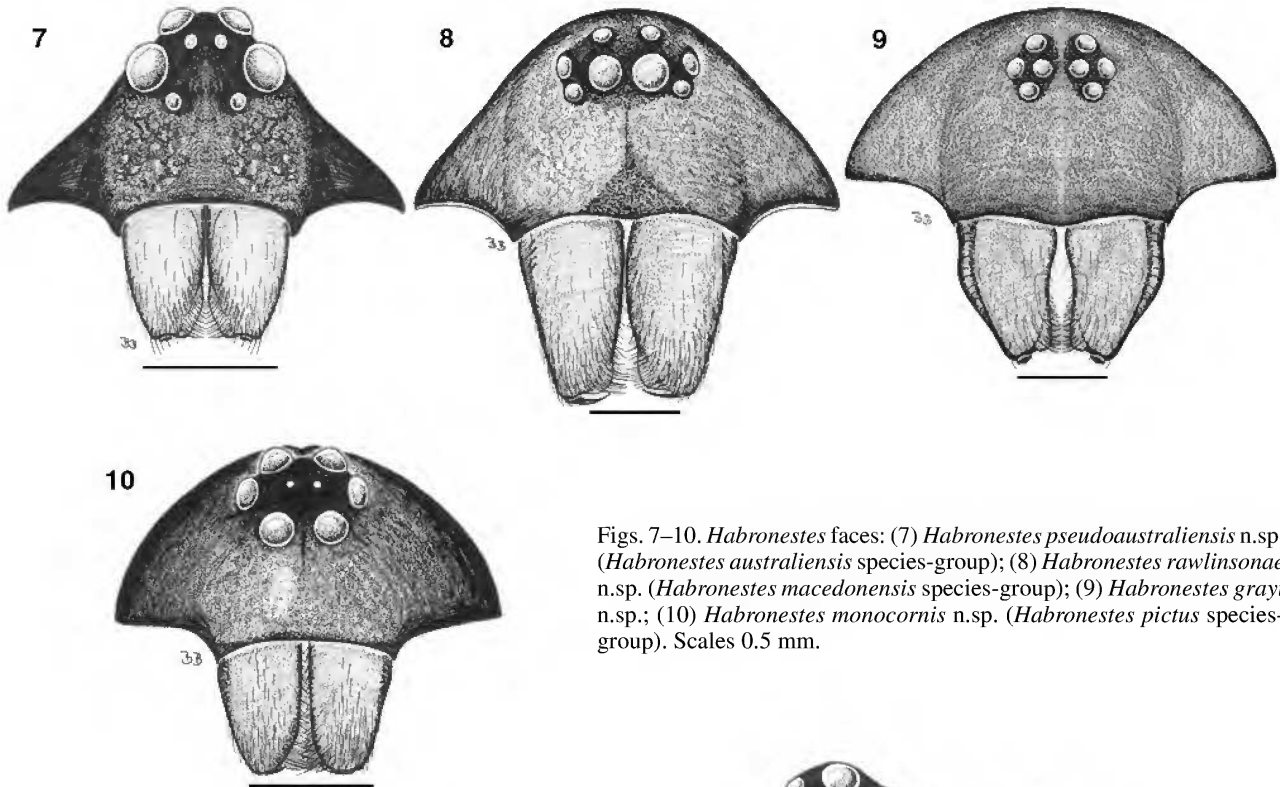
Figs. 1–6. Male palps, ventral view: (1, 2) *Habronestes bradleyi* (Pickard-Cambridge); (3, 4) *Habronestes pseudoaustraliensis* n.sp.; (5, 6) *Habronestes rawlinsonae* n.sp. DTA = dorsal tegular apophysis; DTiA = dorsolateral tibial apophysis; LTA = lateral tegular apophysis; RCF = retrolateral cymbial fold; SP = spicules; VTA = ventral tegular apophysis; VTiA = ventral tibial apophysis.

apical end, covered with spicules; VTA sickle-shaped (Figs. 1–6). Embolus thin and semicircular (only when different mentioned in species description). Tibiae short; with large or small DTiA and short VTiA (Figs. 18–22). *Epigyne*.

Variable, with or without scape, with central or paired opening at posterior margin. Copulatory ducts short or long and coiled ending in ovoid, sometimes contiguous spermathecae.

Key to *Habronestes* species-groups of New South Wales

- 1 posterior lateral eyes largest, two to three times anterior median eyes. Carapace raised in eye region (Figs. 7, 11, 14) *australiensis* species-group
- posterior lateral eyes equal to other eyes or smaller, carapace not raised in front (Figs. 8–10) 2
- 2 anterior median eyes largest (Figs. 8, 15). Carapace highest just behind eye region (Fig. 12) *macedonensis* species-group
- anterior median eyes equal to others or smaller (Figs. 9, 10). Carapace not raised (Fig. 13) *pictus* species-group

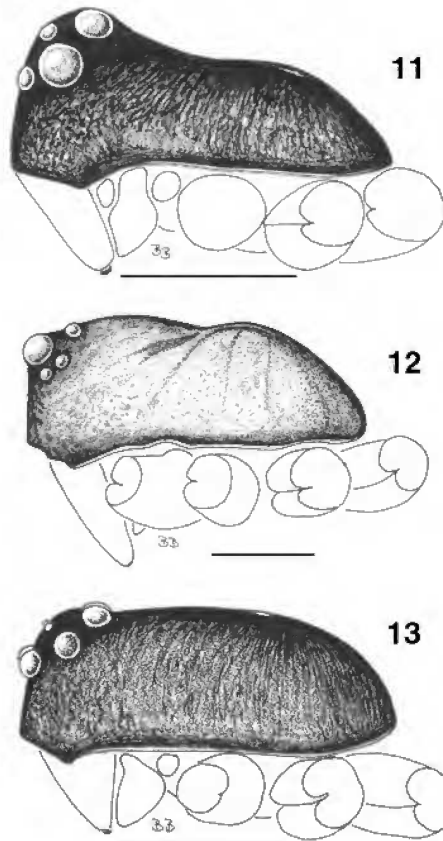


Figs. 7–10. *Habronestes* faces: (7) *Habronestes pseudoaustraliensis* n.sp. (*Habronestes australiensis* species-group); (8) *Habronestes rawlinsonae* n.sp. (*Habronestes macedonensis* species-group); (9) *Habronestes grayi* n.sp.; (10) *Habronestes monocornis* n.sp. (*Habronestes pictus* species-group). Scales 0.5 mm.

***Habronestes australiensis* species-group**

Diagnosis. Carapace raised in eye region. Eyes, PLE largest, 2–3× AME. Abdomen medium to sepia brown with 2–4 pairs of white patches on top of abdomen and 2–3 patches in front of spinnerets.

Description. Medium-sized spiders, body length 4.00–6.50 mm. *Colour.* Carapace, sternum, chelicerae orange or sepia brown, iridescent; maxillae, labium, yellow or pale brown. Abdomen medium or sepia brown with 2–4 pairs of white patches on top and 2–3 patches in front of spinnerets; laterally pale or sepia brown with 1 long horizontal white stripe reaching front; ventrally pale to sepia brown. *Carapace.* Oval, raised at front. *Sternum.* Heart-shaped, anteriorly straight. *Eyes.* In 3 rows, 2 4 2. PLE largest 2–3× AME. Eye group width $\frac{2}{3}$ – $\frac{3}{4}$ of headwidth. *Clypeus & chilum.* Clypeus about 5–6× diameter of ALE; chilum divided or undivided. *Mouthparts.* Chelicerae, basal segment with rows of hairs, bordering mesial margin, dorsally with a few hairs and bristles; maxillae triangular, with promarginal scopula; labium triangular. *Abdomen.* Oval; PLS close together; colulus tiny, with some hairs; tracheal spiracle small, slit-like with sclerotized cover. *Legs.* Length formula 4312; tarsi I–IV with 2 rows of short ventral spines (Fig. 53); 3rd claw on onychium (Fig. 51). *Male palp.* Cymbium with RCF occupying from $\frac{2}{3}$ to whole of cymbium length; with weak dorsal scopula and a few strong spines apically. Tegulum LTA with short stalk and irregular plate; DTA chitinous or membranous, with a thin or flattened stalk and a curled apical end, covered with spicules (Figs. 3, 4); VTA sickle-shaped. Embolus thin and semicircular. Tibiae short; with large or small DTiA and short VTiA (Figs. 18–22).



Figs. 11–13. *Habronestes* cephalothorax, lateral view: (11) *Habronestes pseudoaustraliensis* n.sp. (*Habronestes australiensis* species-group); (12) *Habronestes rawlinsonae* n.sp. (*Habronestes macedonensis* species-group); (13) *Habronestes monocornis* n.sp. (*Habronestes pictus* species-group). Scales 1 mm.

Key to new species of the *Habronestes australiensis* species-group of New South Wales

- 1 males 2
 — females 4
- 2 Legs not annulated. Palpal DTiA short. Cymbium strongly bent, RCF reaches tip of cymbium. Embolus originates retrolaterally (Figs. 21, 22) *H. driscollii*
 — Legs clearly annulated. Palpal DTiA long. Cymbium not bent, RCF only about $\frac{2}{3}$ of cymbium length. Embolus originates prolaterally (Figs. 17–20) 3
- 3 Palpal tibia with thick spur on base of DTiA, LTA with 2 sickle-shaped hooks retrolaterally (Figs. 19, 20) *H. hamatus*
 — Palpal tibia without thick spur, LTA medially with concavity (Figs. 17, 18) *H. pseudoaustraliensis*
- 4 Epigyne with large, semicircular opening and large, globular spermathecae (Figs. 23, 24) *H. pseudoaustraliensis*
 — Epigyne with small, semicircular opening and long, spiralled copulatory ducts (Figs. 25, 26) *H. driscollii*

***Habronestes driscollii* n.sp.**

Figs. 21, 22, 25, 26, 138

Type material. HOLOTYPE ♂: NSW, Pulletop, 33°58'46"S 146°30'28"E, 24.ii.1999, DD, QM S58544. PARATYPES: 1 ♀ QM S51499, 1 ♂ QM S51540, both same data as holotype.

Diagnosis. Carapace yellow orange. Abdomen with 2 pairs of white patches on anterior part and 2–3 patches in front of spinnerets. Cymbium extremely bent, RCF reaching tip. Epigyne with very small central opening.

Description. *Male* (holotype). Total length 5.52; carapace 2.32 long, 1.80 wide; 1.16 high; cl/cw 1.29; sternum 1.00 long, 1.00 wide; sl/sw 1.00. Abdomen 3.20 long, 2.40 wide. *Colour.* Carapace yellow orange, with dark margin; sternum & chelicerae yellow, orange; maxillae & labium yellowish orange, distally white. Abdomen medium brown with 2 pairs of white patches on anterior part and 2–3 patches in front of spinnerets; laterally pale brown with 1 long horizontal white stripe reaching front; ventrally pale brown; legs orange brown to yellow. *Carapace.* Raised at front. *Eyes.* In 3 rows, 2 4 2. PLE largest. Eye group width 0.76 of headwidth; AME 0.10; ALE 0.10; PME 0.18; PLE 0.30; AME–AME 0.08; AME–ALE 0.18; ALE–PLE 0.10; PME–PME 0.14; PME–PLE 0.16. MOQ: AME–PME 0.46; AME–AME 0.28; PME–PME 0.50. *Clypeus & chilum.* Clypeus 0.56 high; chilum divided. *Legs.* Length formula 4312; femora I–III with 1 row, femur IV with 2 rows of long thin setae ventrally; paired claws with 15 or more teeth. *Male palp* (Figs. 21, 22). RCF deep, running entire length of cymbium, RCF and cymbium strongly bent; cymbium with 4 strong spines apically; DTA with a flattened stalk; VTA with sharp tip; embolus originates retrolaterally. Tibiae short with 2 long prolateral setae, and with a group of bent spines retrolaterally; DTiA as long as ventrolateral apophysis; VTiA short (Fig. 22).

Female (paratype QM S51499). Total length 4.40; carapace 2.20 long, 1.76 wide; 1.12 high; cl/cw 1.25; sternum 0.96 long, 0.96 wide; sl/sw 1.00. Abdomen 2.20 long, 1.48 wide.

Colour. As in male. *Eyes.* Pattern as in male. Eye group width 0.84 of headwidth; AME 0.10; ALE 0.10; PME 0.18; PLE 0.30; AME–AME 0.08; AME–ALE 0.18; ALE–PLE 0.10; PME–PME 0.14; PME–PLE 0.16. MOQ: AME–PME 0.46; AME–AME 0.28; PME–PME 0.50. Clypeus 0.56 high. *Epigyne* (Figs. 25, 26). With small posterior oval to semicircular opening. Vulva with extremely long, spiralled copulatory ducts ending in almost touching spermathecae.

Distribution. Known only from type locality in western New South Wales (Fig. 138).

Etymology. Species name is a patronym in honour Dr Don Driscoll, the collector of the type.

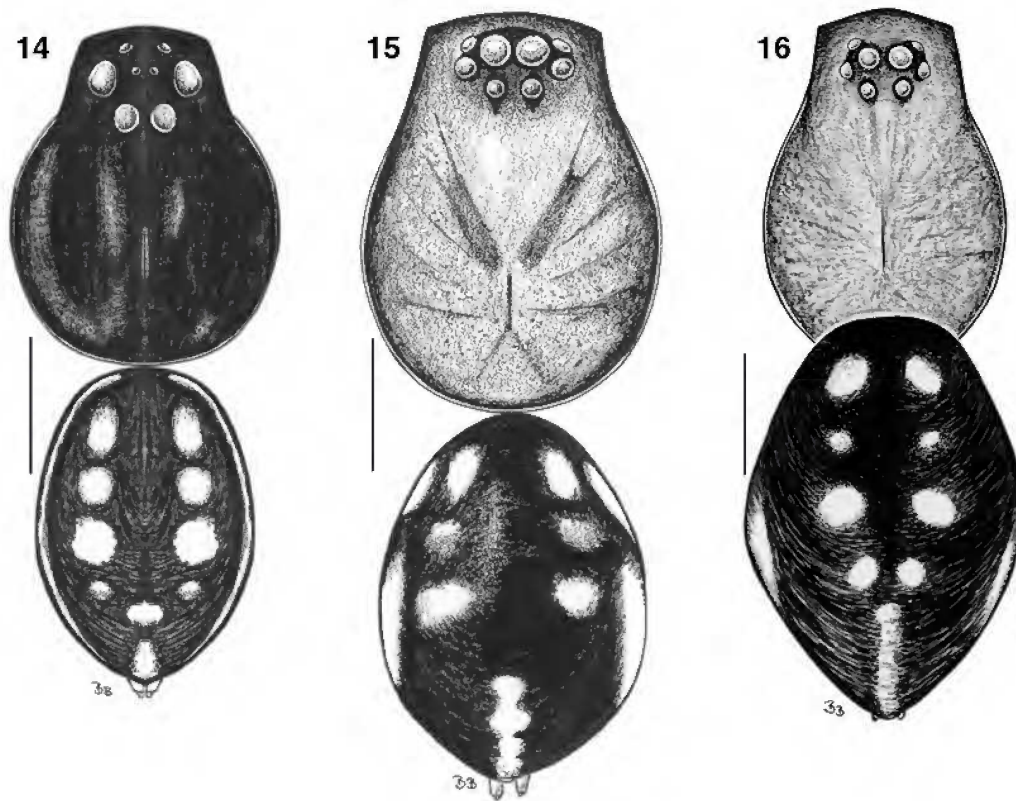
***Habronestes hamatus* n.sp.**

Figs. 19, 20, 138

Type material. HOLOTYPE ♂: NSW, Pulletop, 33°58'46"S 146°30'28"E, 24.ii.1999, D. Driscoll, QM S51505.

Diagnosis. Carapace sepia brown. Abdomen with 4 pairs of white patches on top and 2 patches in front of spinnerets. Male palp with VTA hidden by extremely large LTA; tibia with a thick spine retrolaterally at base of large, dorsolateral tibial apophysis.

Description. *Male* (holotype). Total length 5.52; carapace 2.80 long, 2.00 wide; 1.28 high; cl/cw 1.40; sternum 1.40 long, 1.16 wide; sl/sw 1.21. Abdomen 2.72 long, 1.76 wide. *Colour.* Carapace sepia brown, iridescent; sternum reddish brown; chelicerae medium brown; maxillae, labium pale brown, bases darker brown. Abdomen sepia brown with 4 pairs of white patches on top and 2 patches in front of spinnerets; laterally sepia brown with 1 long horizontal white stripe reaching front; ventrally pink brown; legs medium brown with indistinct colour pattern; legs I–IV with pale brown coxa and sepia brown femur. *Carapace.* Raised at front. *Sternum.* Heart-shaped anteriorly straight; with lateral margin produced between coxae and intercoxae; glossy. *Eyes.* In 3 rows 2 4 2. PLE largest. Eye group width



Figs. 14–16. *Habronestes* body, dorsal view: (14) *Habronestes pseudoaustraliensis* n.sp.; (15) *Habronestes rawlinsonae* n.sp.; (16) *Habronestes hebronae* n.sp. Scales 1 mm.

0.7 of head width; AME 0.12; ALE 0.12; PME 0.18; PLE 0.30; AME–AME 0.06; AME–ALE 0.10; ALE–PLE 0.08; PME–PME 0.14; PME–PLE 0.14. MOQ: AME–PME 0.50; AME–AME 0.30; PME–PME 0.50. *Clypeus & chilum*. Clypeus 0.72 high; chilum undivided, long. *Male palp* (Figs. 19, 20). RCF $\frac{2}{3}$ of the cymbium length. LTA with t-shaped horizontal plate and 2 large hooks retrolaterally; DTA with thin stalk; VTA with blunt tip. Tibiae short; DTiA 1.5 as long as tibia, with thick basal spine.

Female. Unknown.

Distribution. Known only from type locality in western New South Wales (Fig. 138).

Etymology. Species name is an adjective (Latin: *hamatus* = with hooks) taken because of the large hooks on the retrolateral part of the LTA of the male palp.

***Habronestes pseudoaustraliensis* n.sp.**

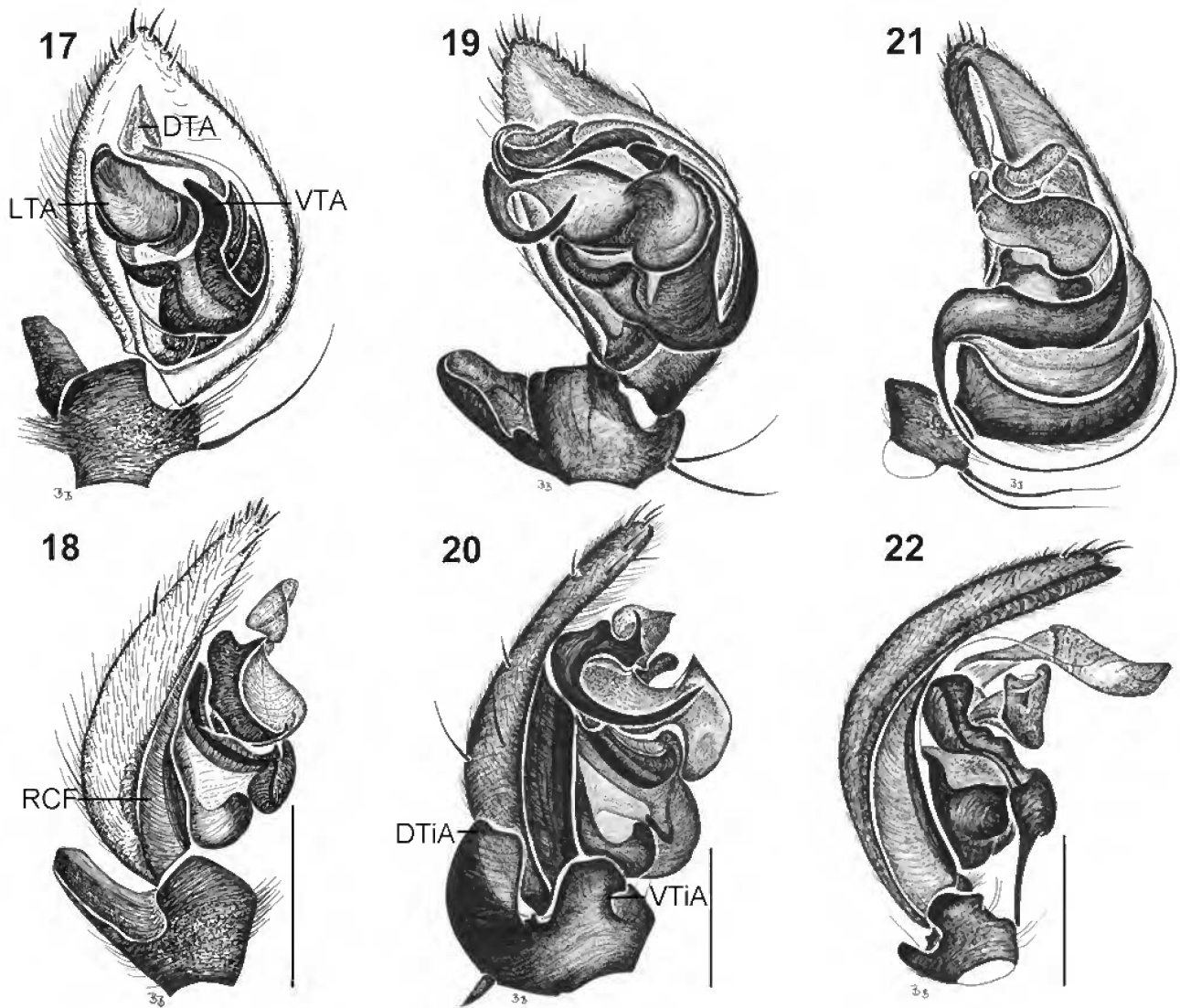
Figs. 3, 4, 17, 18, 23, 24, 53, 138

Type material. HOLOTYPE ♂: NSW, Weelah SF, 33°21'51"S 147°15'2"E, 25.iii.1996, *Callitris* forest F4 Trap C1, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49573. PARATYPES: 1 ♂ same data as holotype but coll. Trap A3, AM KS55704; 1 ♂ 10 km N of Girral on Girral-Condobolin Rd, 33°39'43"S 147°4'6"E, 28.iii.1996, roadside corridor vegetation, 21–28 Mar 1996, D. Smith & R. Harris, AM KS50849; 2 ♂ 35 km S of Burcher on Burcher-W Wyalong Rd, 33°45'12"S 147°18'56"E, 28.iii.1996, roadside corridor vegetation, 21–28 Mar 1986, D. Smith & R. Harris, AM KS50879; 1 ♂ Gubatta, 33°32'0"S 146°31'28"E, 24–28.ii.1999, DD, QM S52128; 2 ♂ ♂ as previous, QM S50833; 1 ♂ Gubatta, 33°38'10"S 146°33'8"E, 24.ii.1999, DD, QM S50875; 2 ♂ ♂ Gubatta,

33°34'33"S 146°34'36"E, 24–28.ii.1999, DD, QM S50935; 1 ♂ Gubatta, 33°38'7"S 146°33'12"E, 24–28.ii.1999, DD, QM S50955; 1 ♂ Gubatta, 33°34'50"S 146°35'36"E, 24.ii.1999, DD, QM S51551; 1 ♂ Taleeban Woodland, 33°56'29"S 146°25'8"E, 23–27.ii.1999, DD, QM S51004; 1 ♀ as previous but coll. 18.x.1999, QM S39689; 1 ♂ Taleeban Woodland, 33°57'42"S 146°26'52"E, 23–27.ii.1999, DD, QM S50866; 1 ♀ Taleeban Woodland, 33°57'36"S 146°24'66"E, 18.x.1999, DD, QM S53090; 2 ♀ ♀ as previous QM S53230; 1 ♂ Ungarie SF, 33°39'44"S 147°4'6"E, 25.iii.1996, *Callitris* forest F2 trap C2, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49590.

Diagnosis. With 4 pairs of white patches on top of abdomen and 2 patches in front of spinnerets; tibia with long LTiA. Epigyne with semicircular opening. Vulva with large, contiguous globular spermathecae.

Description. *Male* (holotype). Total length 4.40; carapace 2.24 long, 1.72 wide; 0.96 high; cl/cw 1.30; sternum 1.12 long, 1.00 wide; sl/sw 1.12. Abdomen 2.16 long, 1.40 wide. *Colour*. Carapace, sternum, chelicerae sepia brown, iridescent. Maxillae pale brown; labium sepia brown. Abdomen (Fig. 14) sepia brown with 4 pairs of white patches on top and 2 patches in front of spinnerets; ventrally and laterally sepia brown with 1 long horizontal white stripe reaching front. Legs medium brown with indistinct colour pattern; legs I–IV with pale brown coxa, sepia brown femur. *Carapace*. Raised at front. *Eyes*. In 3 rows 2 4 2. PLE largest. Eye group width 0.75 of head width; AME 0.08; ALE 0.12; PME 0.18; PLE 0.26; AME–AME 0.06; AME–ALE 0.16; ALE–PLE 0.06; PME–PME 0.10; PME–PLE 0.16. MOQ: AME–PME 0.44; AME–AME 0.22; PME–PME 0.46. *Clypeus & chilum*. Clypeus 0.56 high; chilum divided. *Male palp* (Figs. 17, 18). RCF $\frac{2}{3}$ cymbium length. LTA half moon-shaped with median concavity; DTA with thin stalk; VTA with blunt tip; embolus originating



Figs. 17–22. *Habronestes australiensis* species-group male palps, ventral view (above), lateral view (below): (17–18) *Habronestes pseudoaustraliensis* n.sp.; (19–20) *Habronestes hamatus* n.sp.; (21–22) *Habronestes driscolli* n.sp. Scale 0.5 mm. DTA = dorsal tegular apophysis; DTiA = dorsolateral tibial apophysis; LTA = lateral tegular apophysis; RCF = retrolateral cymbial fold; VTA = ventral tegular apophysis; VTiA = ventral tibial apophysis.

prolaterally. Tibia short, with 1 long prolateral seta, and with a group of bent spines retrolaterally; DTiA 1.5× as long as tibia; VTiA short.

Female (paratype QM S53230). Total length 6.40; carapace 2.96 long, 2.00 wide; 1.40 high; cl/cw 1.48; sternum 1.36 long, 1.20 wide; sl/sw 1.13. Abdomen 3.44 long, 2.48 wide. *Colour*. Same as male. *Eyes*. Pattern as in male. Eye group width 0.64 of headwidth; AME 0.12; ALE 0.14; PME 0.24; PLE 0.3; AME–AME 0.04; AME–ALE 0.18; ALE–PLE 0.1; PME–PME 0.14; PME–PLE 0.12. MOQ. AME–PME 0.54; AME–AME 0.28; PME–PME 0.62. Clypeus 0.68 high. *Legs*. Same as male. *Epigyne* (Figs. 23, 24). With semicircular opening. Vulva with extremely short copulatory ducts ending in large globular, contiguous spermathecae.

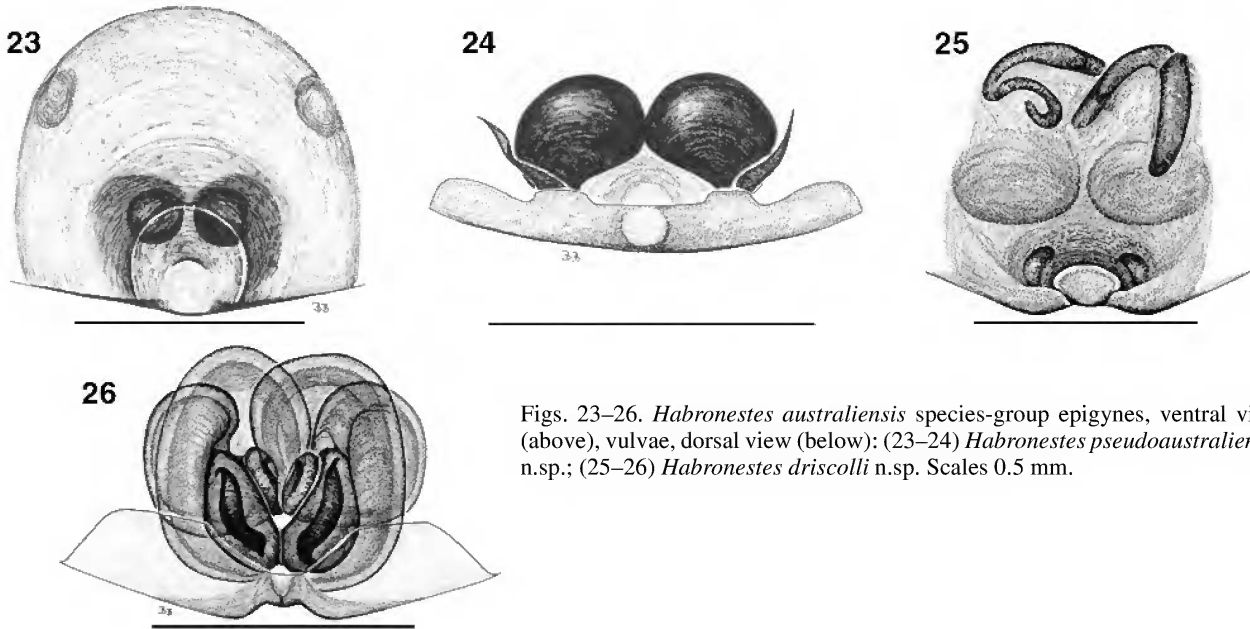
Distribution. Western New South Wales (Fig. 138).

Etymology. Refers to the similarity to the type species of the species-group *H. australiensis*.

Habronestes macedonensis species-group

Diagnosis. Carapace not raised in front; highest point just behind eye region. Eyes in 2 rows, both rows procurved, AME largest. Femora III, IV with a row of 3–6 stout dorsal spines at distal end; patella III, IV with 1 irregular longitudinal row of stout spines prolaterally. Abdomen with 2–4 pairs of white patches on anterior part and 1 or 2 patches in front of spinnerets.

Description. Medium-sized spiders, 4.60–9.70 mm body length. *Colour*. Carapace chestnut brown with dark fovea and dark bifurcate or radiate stripes in front; sternum yellow, reddish or pale brown; chelicerae medium or reddish brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2–4 pairs of white patches on anterior part, and 1 or 2 long and undulate patches in front of spinnerets; laterally sepia brown or pink brown with 2–3 elongate and broad white patches; ventrally pale pink brown usually with longitudinal white stripe. Legs yellow or pale



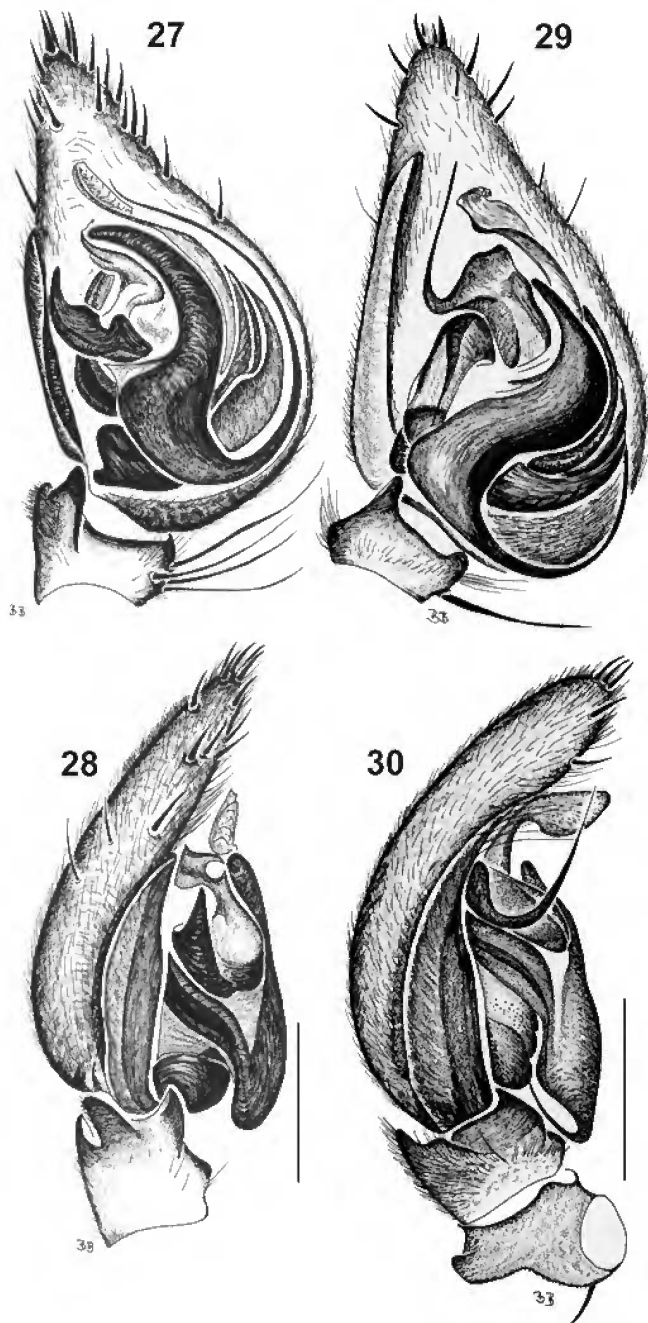
Figs. 23–26. *Habronestes australiensis* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (23–24) *Habronestes pseudoaustraliensis* n.sp.; (25–26) *Habronestes driscollii* n.sp. Scales 0.5 mm.

brown; clearly annulated or indistinct colour pattern *Carapace*. Oval, highest just behind eyes. *Sternum*. Heart-shaped, anteriorly straight, finely reticulated. *Eyes*. In 2 rows, each with 4 eyes, both rows procurved. AME largest. Eye group width 0.54–0.6 of headwidth. *Clypeus & chilum*. Clypeus about 3× diameter of AME; chilum undivided. *Mouthparts*. Chelicerae, basal segment with rows of hairs, bordering mesial margin, dorsally hirsute, laterally with condyle; maxillae triangular, with promarginal scopula;

labium triangular. *Legs*. Length formula 4132; femora III, IV with a row of 3–6 stout dorsal spines at distal end; patella III, IV with 1 irregular longitudinal row of stout spines prolaterally; 3rd claw on onychium, (Fig. 51). *Male palp*. RCF $\frac{1}{2}$ – $\frac{2}{3}$ of cymbium length; LTA with an irregular plate; DTA chitinous, with a flattened or thin stalk and an curled apical end covered with spicules; VTA sickle-shaped, long, with rounded or sharp tip; embolus thin, or semicircular. Tibiae with short apophyses.

Key to species of the *Habronestes macedonensis* species-group of New South Wales

- 1 Males 2
- Females 7
- 2 Palpal patella with dorsal apophysis, LTA with long retrolateral spine (Figs. 29, 30, 48) *H. hebronae*
- Palpal patella without dorsal apophysis, LTA without long retrolateral spine (Figs. 46, 47, 49, 50) 3
- 3 Metatarsus I without special spination ventrally 4
- Metatarsus I with band of conical thorn-like spines ventrally 6
- 4 Sickle-shaped VTA extremely long, reaching over tegulum (Figs. 27, 28, 50) *H. rawlinsonae*
- Sickle-shaped VTA short and blunt, LTA half moon-shaped with dorsal spine (Figs. 44, 45, 49) *H. ungari*
- 6 LTA fan-shaped with serrated margin retrolaterally (Figs. 40, 41, 46) *H. macedonensis*
- LTA not fan-shaped (Figs. 42, 43, 47) *H. weelahensis*
- 7 Epigyne with w-shaped scape, spermathecae globular, not touching (Figs. 35, 36) *H. macedonensis*
- Epigyne with paired oval openings (Figs. 31–34) 8
- 8 Epigyne with long oval openings, and s-shaped copulatory ducts (Figs. 31, 32) *H. rawlinsonae*
- Epigyne with broad oval openings, and sausage-like copulatory ducts (Figs. 33, 34) *H. hebronae*



Figs. 27–30. *Habronestes macedonensis* species-group male palps, ventral view (above), lateral view (below): (27–28) *Habronestes rawlinsonae* n.sp.; (29–30) *H. hebroniae* n.sp. Scales 0.5 mm.

Habronestes macedonensis (Hogg, 1900)

Figs. 35, 36, 37, 40, 41, 46, 139

Storena macedonensis Hogg, 1900: 2, 97, 98, pl. 14, fig. 4 (description male); Rainbow, 1911:150 (description male).

Habronestes macedonensis.—Jocqué, 1995: 145, fig. 3c,d (description male).

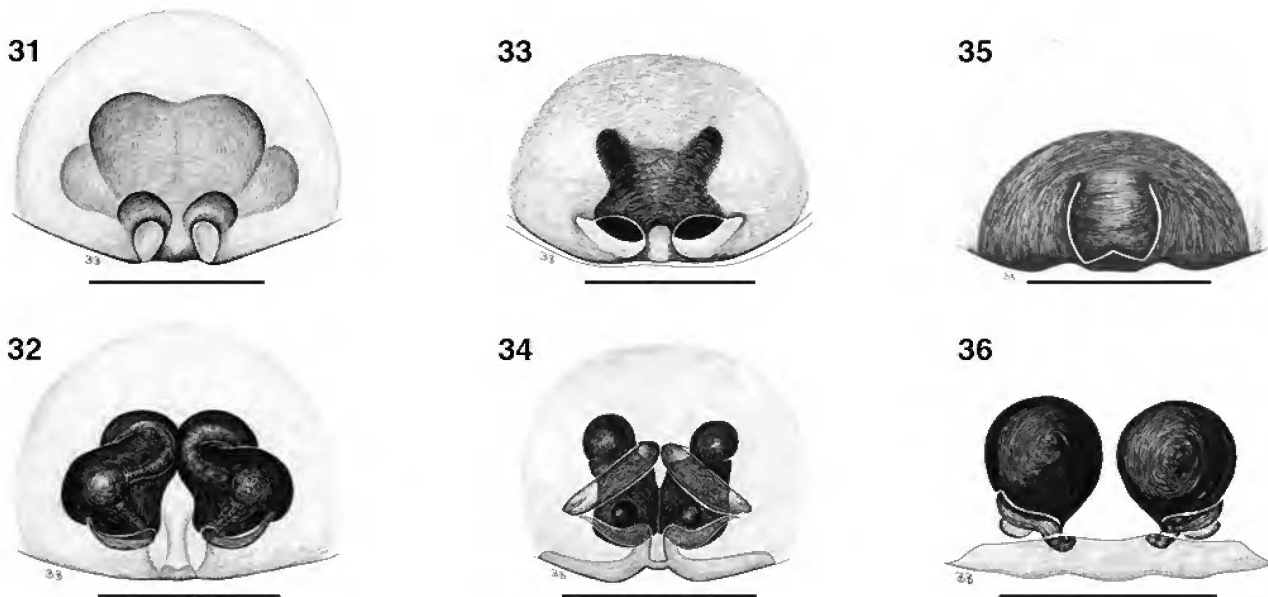
Remarks. The male of *Habronestes macedonensis* was first described by Hogg, 1900 as *Storena macedonensis*. Jocqué (1995) has reexamined the holotype and placed the species in *Habronestes* because of the special palp structure. The female is described here for the first time.

Material examined. 1 ♀, 1 ♂: NSW, Washpool NP Grassy Ck, where crossed by North West Fire Trail/Washpool Trail, 29°27'43"S 152°16'22"E, 4.ii–9.iv.1993, 900 m, G/C, AM KS36298; 1 ♀, 1 ♂ as previous, QM S60828; 1 ♂ Conglomerate SF, 100 m SW of jctn of Hallgraths Trail & Sherwood Rd, 30°7'0"S 153°3'14"E, 4.ii–9.iv.1993, 320 m, G/C, AM KS39028; 1 ♂ Hazelbrook, 33°44'S 150°27'E, 4.ii.1979, M. Dingley, AM KS3037; 1 ♂ Warra SF, 2.8 km W of Moggs Swamp Ck, Moggs Swamp Fire Trail, 29°59'19"S 151°57'14"E, 4.ii–9.iv.1993, 1140 m, G/C, AM KS36361; 1 ♂ Warra SF, Moggs Swamp Fire Trail, 2.5 km N of Moggs Swamp Ck, 29°57'32"S 151°58'18"E, 4.ii–9.iv.1993, 1170 m, G/C, AM KS36370; 1 ♂ Rocky Waterholes Rd, Beaury SF, 28°32'49"S 152°20'11"E, 9.iv.1993, 4.ii–9.iv.1993, 705 m, G/C, AM KS56172. ACT: 1 ♂ Tidbinbilla SF, 35°26'S 148°56'E, litter, P. Ormay, AM KS3535.

Diagnosis. Eyes in 2 rows, both rows procurved, AME largest. Abdomen with 2 pairs of white patches on anterior part, the first elongated and nearly divided in two; and 2 patches in front of spinnerets. Metatarsus I with irregular band of short strong spines ventrally in males. LTA fan-shaped covered with small spicules (Figs. 40, 41). Epigyne with w-shaped scape. Vulva with extremely short copulatory ducts ending in large, globular, not touching spermathecae (Figs. 35, 36).

Description. *Male* (AM KS36298). Total length 6.24; carapace 3.44 long, 2.24 wide; 1.32 high; cl/cw 1.53; sternum 1.40 long, 1.36 wide; sl/sw 1.02. Abdomen 2.8 long, 2.16 wide. *Colour.* Carapace chestnut brown with dark fovea and dark bifurcate patches in front; sternum yellow brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 pairs of white patches on anterior part, the first elongated and nearly divided in two and 1 long and undulate patch in front of spinnerets; laterally sepia brown with 2–3 long and broad white patches; ventrally pale pink brown. Legs yellow; clearly annulated; legs I–IV with white coxa, prolateral suture sepia brown, pale trochanter, proximal ½ of femora white and distal ½ sepia brown with darker brown lateral stripes on patella and tibiae III, IV. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME largest. Eye group width 0.6 of head width; AME 0.24; ALE 0.16; PME 0.16; PLE 0.16; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.16; PME–PLE 0.16. MOQ. AME–PME 0.52; AME–AME 0.52; PME–PME 0.48. *Clypeus & chilum.* Clypeus 0.60 high; chilum undivided, short. *Legs.* Length formula 4132; metatarsus I with irregular band of short, strong spines ventrally; femora III, IV with a row of 5–6 stout dorsal spines at distal end; patella III, IV with 1 irregular longitudinal row of stout spines prolaterally. *Male palp* (Figs. 40, 41, 46). Cymbium with flat RCF, ½ of the cymbium length. LTA with a thick, turned vertical stalk and with a sickle-shaped plate serrated on retrolateral margin; DTA chitinous, with a flattened stalk and a curled apical end covered with spicules; VTA sickle-shaped, long, with rounded tip. Tibiae short; with 1 long prolateral seta and with a group of bent spines retrolaterally; DTiA with chitinous rim, triangular; VTiA short and triangular.

Female (AM KS36298). Total length 8.72; carapace 4.32 long, 3.00 wide; 2.00 high; cl/cw 1.50; sternum 1.64 long, 1.60 wide; sl/sw 1.02. Abdomen 4.40 long, 3.20 wide. *Colour.* Same as male. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME largest. Eye group width 0.54 of head width; AME 0.30; ALE 0.2; PME 0.20; PLE 0.20; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.20; PME–PLE 0.20. MOQ. AME–PME 0.68; AME–



Figs. 31–36. *Habronestes macedonensis* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (31–32) *Habronestes rawlinsonae* n.sp.; (33–34) *Habronestes hebroniae* n.sp.; (35–36) *Habronestes macedonensis* (Hogg). Scales 0.5 mm.

AME 0.64; PME–PME 0.60. Clypeus 1.12 high. *Epigyne* (Figs. 35, 36). With w-shaped scape. Vulva with extremely short copulatory ducts ending in large globular, not touching spermathecae.

Distribution. Victoria, northeastern New South Wales and ACT (Fig. 139).

***Habronestes hebroniae* n.sp.**

Figs. 16, 29, 30, 33, 34, 48, 139

Type material. HOLOTYPE ♂: NSW, Pulletop, 34°0'6"S 146°5'10"E, 24–28.ii.1999, DD, QM S50998. PARATYPES: same data as holotype; 1 ♂ QM S50998, 2 ♂ QM S51516, 1 ♂ QM S50997; 1 ♂ Gubatta, 33°34'33"S 146°34'36"E, 28.ii.1999, DD, QM S51002; 1 ♂ Pulletop, 33°58'10"S 146°4'50"E, 24–28.ii.1999, DD, QM S39856; 3 ♂ Pulletop, 33°58'46"S 146°3'28"E, 24–28.ii.1999, DD, QM S51501; 4 ♂ Pulletop, 33°58'55"S 146°4'46"E, 24–28.ii.1999, DD, QM S51602; 1 ♂ Taleeban Woodland, 33°55'33"S 146°28'23"E, 23–27.ii.1999, DD, QM S50831; 1 ♀ Taleeban Woodland, 33°57'55"S 146°26'39"E, 27.ii.1999, DD, QM S50920.

Diagnosis. With 4 pairs of white patches on top of abdomen and 1 long patch in front of spinnerets. Tibia I with a band of conical, thorn-like spines ventrally in males. LTA with retrolateral thorn. Palpal patella with dorsolateral apophysis (Figs. 29, 30). Epigyne with paired broad-oval openings. Vulva with sausage-shaped copulatory ducts ending at posteriorly touching spermathecae (Figs. 33, 34).

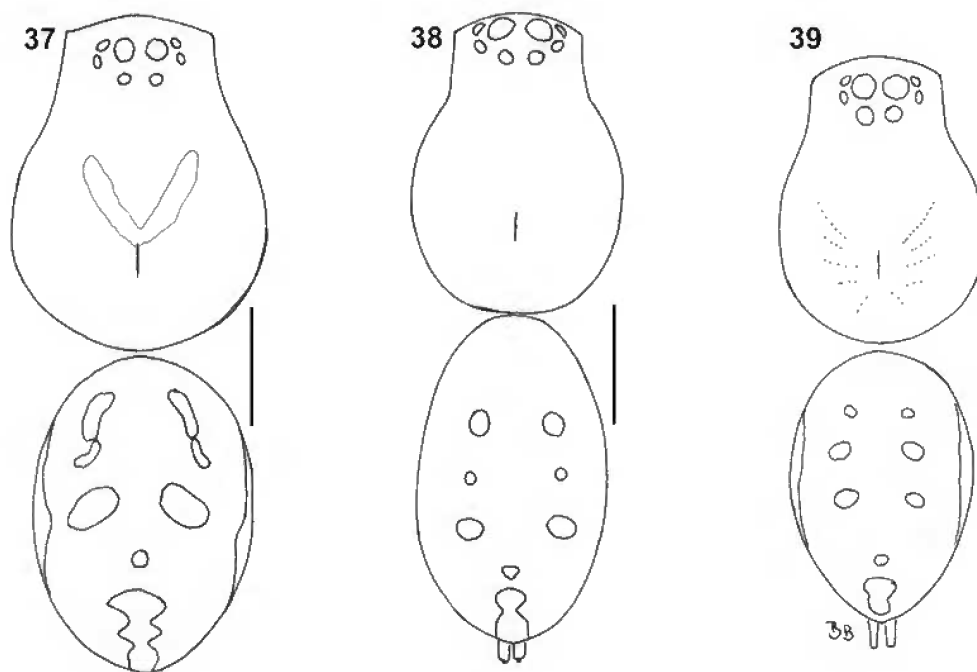
Description. *Male* (holotype). Total length 4.64; carapace 2.32 long, 1.80 wide; 1.16 high; cl/cw 1.28; sternum 1.04 long, 1.00 wide; sl/sw 1.04. Abdomen 2.32 long, 1.52 wide. *Colour.* Carapace chestnut brown with dark fovea and dark radiating stripes; sternum and chelicerae reddish brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 4 pairs of white patches on top and 1 long patch in front of spinnerets; laterally sepia brown with 2 long, white patches equal in length; ventrally pink brown with 1 longitudinal white stripe from epigastric fold to near tracheal spiracle. Legs pale brown with indistinct colour pattern;

legs I, II, III, IV with coxa and trochanter white, proximal ½ of femora white and distal ½ sepia brown; leg II with darker brown lateral stripes on patella and tibia. *Sternum.* With lateral margin produced between coxae; finely reticulated. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME largest. Eye group width 0.58 of headwidth; AME 0.18; ALE 0.12; PME 0.12; PLE 0.12; AME–AME 0.04; AME–ALE 0.02; ALE–PLE 0.02; PME–PME 0.10; PME–PLE 0.10. MOQ: AME–PME 0.40; AME–AME 0.40; PME–PME 0.34. *Clypeus & chilum.* Clypeus 0.56 high; chilum undivided short. *Legs.* Length formula 4312; tibia I with a band of conical, thorn-like spines ventrally; femora III, IV with a row of 3–4 stout dorsal spines at distal end; patella III, IV with 1 irregular longitudinal row of stout spines prolaterally. *Male palp* (Figs. 29, 30, 48). RCF deep, ⅓ of the cymbium length. LTA with sickle-shaped plate (Fig. 48); DTA with a thin stalk; VTA with acute tip. Tibiae short; with 2 long prolateral setae; DTiA short rounded; patella with dorsolateral apophysis.

Female (paratype, QM S50920). Total length 5.76; carapace 2.68 long, 1.92 wide; 1.16 high; cl/cw 1.39; sternum 1.20 long, 1.20 wide; sl/sw 1.00. Abdomen 3.08 long, 2.12 wide. *Colour.* Same as male. *Eyes.* AME largest. Eye group width 0.6 of headwidth; AME 0.20; ALE 0.14; PME 0.14; PLE 0.14; AME–AME 0.06; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.12; PME–PLE 0.12. MOQ: AME–PME 0.48; AME–AME 0.46; PME–PME 0.40. *Clypeus & chilum.* Clypeus 0.68 high; chilum undivided short. *Legs.* Femora III, IV with a row of 3–4 stout dorsal spines at distal end; patella III, IV with 1 irregular, longitudinal row of stout spines prolaterally. *Epigyne* (Figs. 33, 34). With paired broad-oval openings. Vulva with sausage-shaped copulatory ducts ending at posteriorly touching spermathecae.

Distribution. Western New South Wales (Fig. 139).

Etymology. Species name is a patronym in honour of Mrs Wendy Hebron of the Queensland Museum, who recognized the species as new.



Figs. 37–39. *Habronestes macedonensis* species-group body, dorsal view. (37) *Habronestes macedonensis* (Hogg); (38) *Habronestes ungaru* n.sp.; (39) *Habronestes weelahensis* n.sp. Scales 1 mm.

***Habronestes rawlinsonae* n.sp.**

Figs. 15, 27, 28, 31, 32, 50, 139

Type material. HOLOTYPE ♂: NSW, Gubatta, 33°32'0"S 146°31'28"E, 24–28.ii.1999, DD, QM S51007. PARATYPES: same data as holotype: 6♂♂ QM S51003, 2♂♂ QM S50824; 1♂ Gubatta, 33°38'7"S 146°33'12"E, 24–28.ii.1999, DD, QM S50907; 7♂♂ as previous, QM S50954; 1♂ Gubatta, 33°34'33"S 146°34'36"E, 24–28.ii.1999, DD, QM S50936; 1♂ as previous QM S51015; 1♂ Gubatta, 33°34'50"S 146°35'36"E, 24–28.ii.1999, DD, QM S51535; 1♂ Pulletop, 33°57'57"S 146°4'46"E, 24–28.ii.1999, DD, QM S50938; 2♂♂ as previous, QM S51582; 1♂ Pulletop, 33°58'10"S 146°4'50"E, 24–28.ii.1999, DD, QM S50978; 3♂♂ as previous, QM S51545; 2♂♂ Pulletop, 34°0'6"S 146°5'10"E, 24–28.ii.1999, DD, QM S50996; 1♂ as previous, QM S51515; 3♂♂ Pulletop, 33°58'46"S 146°3'28"E, 24–28.ii.1999, DD, QM S51502; 1♂ Pulletop, 34°0'59"S 146°4'15"E, 24–28.ii.1999, DD, QM S51519; 1♂ as previous, QM S51520; 2♂♂ as previous, QM S51572; 1♂ Pulletop, 33°58'55"S 146°4'46"E, 24.ii.1999, DD, QM S51589; 2♂♂ as previous, QM S51601; 1♂ Taleeban Woodland, 33°57'55"S 146°26'39"E, 23–27.ii.1999, DD, QM S50854; 2♂♂ Taleeban Woodland, 33°56'29"S 146°25'8"E, 23–27.ii.1999, DD, QM S50899.

Diagnosis. Abdomen with 3 pairs of white patches dorsally and 1 patch in front of spinnerets. VTA extremely long. Epigyne with 2 long, oval openings.

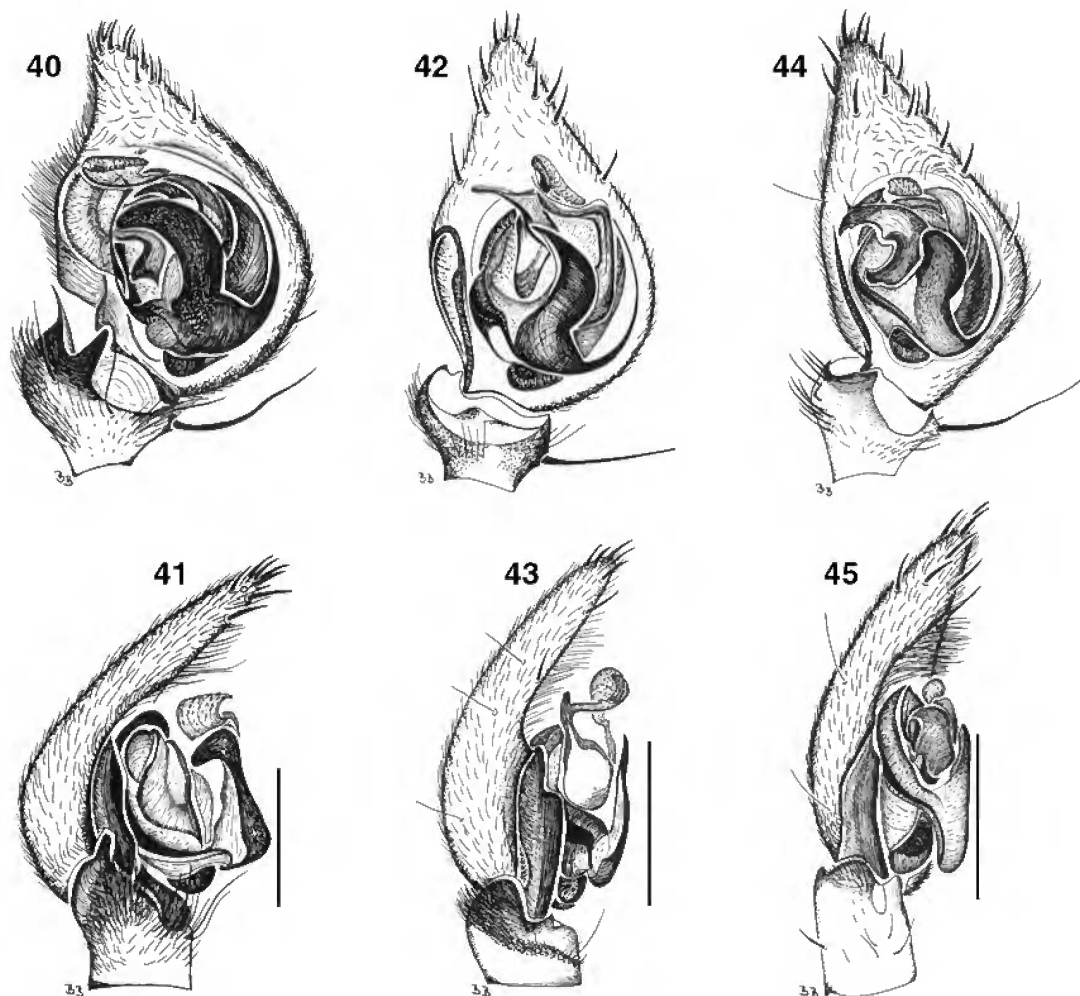
Description. *Male* (holotype). Total length 6.52, carapace 3.4 long, 2.56 wide; 1.20 high; cl/cw 1.32; sternum 1.52 long, 1.44 wide; sl/sw 1.05. Abdomen 3.12 long, 2.24 wide. *Colour.* Carapace chestnut brown, iridescent; with dark fovea and dark bifurcate patches in front; sternum yellow brown; chelicerae reddish brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2–3 pairs of white patches on anterior part and 1 long and undulate patch in front of spinnerets; laterally sepia brown with 2 long and broad white patches; ventrally pink brown. Legs yellow; clearly annulated; legs I–IV with white coxa, prolateral suture sepia brown, pale trochanter, proximal

margin of femora sepia brown, proximal ½ white and distal ½ sepia brown with darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME largest. Eye group width 0.58 of headwidth; AME 0.28; ALE 0.20; PME 0.20; PLE 0.20; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.02; PME–PME 0.14; PME–PLE 0.14. MOQ: AME–PME 0.54; AME–AME 0.60; PME–PME 0.54. *Clypeus & chilum.* Clypeus 0.64 high; chilum undivided short. *Legs.* Length formula 4123; femora III, IV with a row of 5–6 stout, dorsal spines at distal end; patella III, IV with 1 irregular, longitudinal row of stout spines prolaterally. *Male palp* (Figs. 5, 6, 27, 28, 50). RCF deep, ⅔ of the cymbium length; LTA with sickle-shaped plate with spines; DTA with a thin stalk; VTA with blunt tip, extremely long, reaching margin of bulb. Tibiae short; with 2 long prolateral setae; DTiA short rounded; VTiA (Fig. 28).

Female (paratype QM S51596). Total length 9.66; carapace 4.58 long, 3.16 wide; 2.04 high; cl/cw 1.45; sternum 1.80 long, 1.80 wide; sl/sw 10. Abdomen 5.08 long, 3.58 wide. *Colour.* Same as male. *Eyes.* Pattern as in male. Eye group width 0.55 of headwidth; AME 0.32; ALE 0.20; PME 0.20; PLE 0.20; AME–AME 0.06; AME–ALE 0.04; ALE–PLE 0.06; PME–PME 0.22; PME–PLE 0.24. MOQ. AME–PME 0.72; AME–AME 0.70; PME–PME 0.62. *Clypeus & chilum.* Clypeus 0.84 high; chilum undivided, short. *Epigyne* (Figs. 31, 32). With small, paired, long-oval openings. Vulva with kidney-shaped, anteriorly touching copulatory ducts ending in globular spermathecae.

Distribution. Western New South Wales (Fig. 139).

Etymology. Species name is a patronym in honour of Mrs Wendy Hebron, formerly Rawlinson, of the Queensland Museum, who recognized the species as new.



Figs. 40–45. *Habronestes macedonensis* species-group male palps, ventral view (above), lateral view (below): (40–41) *Habronestes macedonensis* (Hogg); (42–43) *Habronestes weelahensis* n.sp.; (44–45) *Habronestes ungari* n.sp. Scales 0.5 mm.

***Habronestes ungari* n.sp.**

Figs. 38, 44, 45, 49, 139

Type material. HOLOTYPE ♂: NSW, Ungarie SF, 33°39'44"S 147°46'E, 25.iii.1996, *Callitris* forest F2 Trap B4, 21–28 Mar 1996, D. Smith & R. Harris, AM KS83934. PARATYPE: 1 ♂ same data as holotype, AM KS49586.

Diagnosis. Abdomen with 3 pairs of white patches dorsally, and 2 patches in front of spinnerets. Male palp, with LTA with a short vertical stalk and sickle-shaped plate with dorsal spines. VTA sickle-shaped, extremely short, with rounded tip. Palpal tibia without real tibial apophysis.

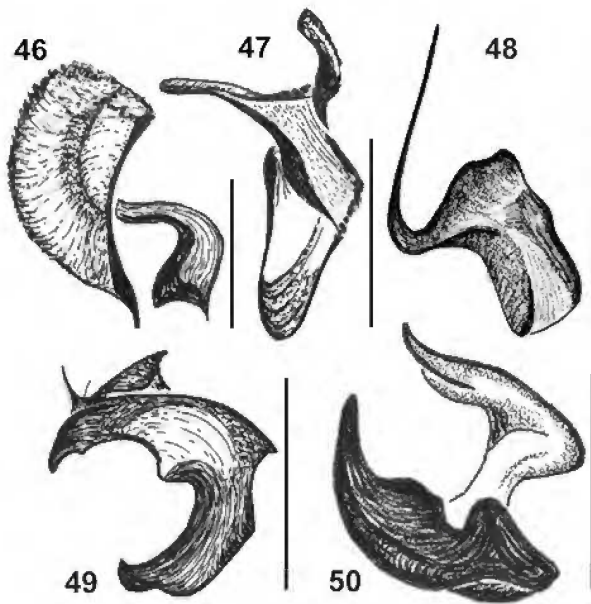
Description. *Male* (holotype). Total length 6.16; carapace 3.00 long, 2.00 wide; 1.20 high; cl/cw 1.50; sternum 1.44 long, 1.20 wide. Abdomen 3.16 long, 1.76 wide. *Colour.* Carapace chestnut brown with dark fovea and dark radiating stripes; sternum pale brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 3 pairs of white patches on anterior part and 2 patches in front of spinnerets; laterally with 2 long white patches, first one larger; ventrally medium brown.

Legs pale brown with indistinct colour pattern; legs I–IV with coxa and trochanter white, proximal ½ of femora white and distal ½ sepia brown, darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME largest. AME 0.27; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.02; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.12; PME–PLE 0.14. MOQ. AME–PME 0.58; AME–AME 0.56; PME–PME 0.48. *Clypeus & chilum.* Clypeus 0.48 high; chilum undivided, short. *Legs.* Length formula 4123; femora III, IV with a row of 3–4 stout dorsal spines at distal end; patella III, IV with 2 longitudinal rows of stout spines prolaterally. *Male palp* (Figs. 44, 45, 49). RCF flat, ½ of the cymbium length; LTA with sickle-shaped plate and dorsal spines. DTA with a thin stalk; VTA sickle-shaped, extremely short with rounded tip; tibiae without real tibial apophysis, with 1 long prolateral seta.

Female. Unknown.

Distribution. Known only from type locality in western New South Wales (Fig. 139).

Etymology. Species name is taken from the type locality.



Figs. 46–50. *Habronestes macedonensis* species-group male palps, LTA, ventral view: (46) *Habronestes macedonensis* (Hogg); (47) *Habronestes weelahensis* n.sp.; (48) *Habronestes hebroniae* n.sp.; (49) *Habronestes ungari* n.sp.; (50) *Habronestes rawlinsonae* n.sp. Scales 0.25 mm.

***Habronestes weelahensis* n.sp.**

Figs. 39, 42, 43, 47, 139

Type material. HOLOTYPE ♂: NSW, Weelah SF, 33°21'51"S 147°15'2"E, 25.iii.1996, *Callitris* forest F4 trap C1, 21–28 Mar 1996, D. Smith & R. Harris, AM KS56090. PARATYPES: 1 ♂ 20 km N of Burcher on rd to Manna Mtn, 33°22'12"S 147°15'2"E, 25.iii.1996, roadside corridor vegetation N5 Trap A2, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49559; 2 ♂ ♂ Boundary Ck SF, 0.45 km SW along Boundary Ck Rd from jctn of Dungal & Shannon Ck Rds, 29°56'48"S 152°33'27"E, 4.ii–9.iv.1993, 600 m, G/C, AM KS39411; 1 ♂ as previous, QM S60630; 1 ♂

second gully N of Wonga Gully, 30°48'39"S 152°7'26"E, 4.ii–9.iv.1993, 270 m, G/C, AM KS39412.

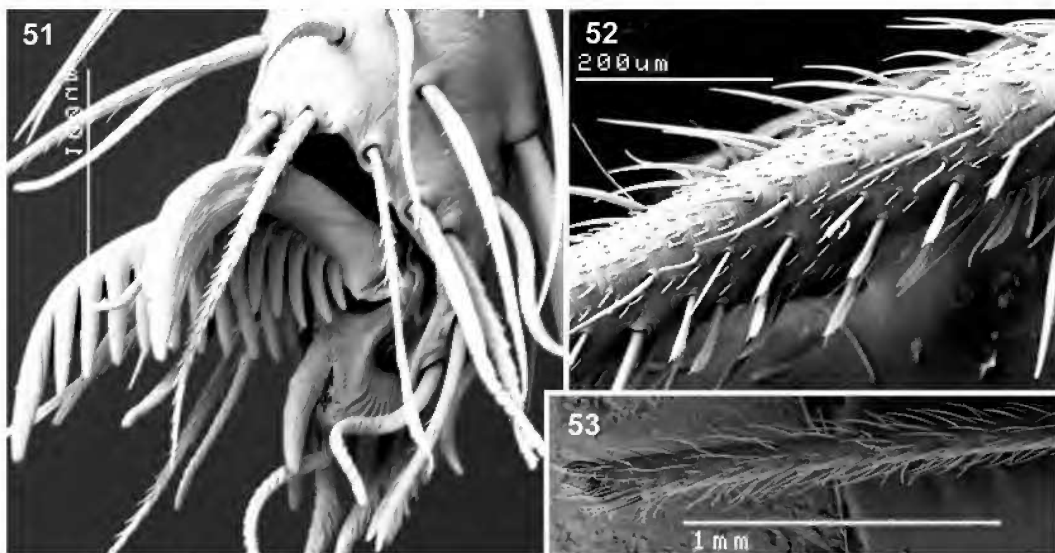
Diagnosis. Abdomen with 3 pairs of white patches dorsally, and 2 patches in front of spinnerets. Metatarsus I with 1 row of about 15 small spines ventrally in males.

Description. *Male* (holotype). Total length 4.96; carapace 2.52 long, 1.76 wide; 1.16 high; cl/cw 1.43; sternum 1.20 long, 1.08 wide. Abdomen 2.44 long, 1.68 wide. *Colour.* Carapace chestnut brown with dark fovea and dark radiate stripes; sternum pale brown; chelicerae medium brown; maxillae, labium pale brown, distally white. Abdomen pink brown with 3 pairs of white patches on anterior part and 2 patches in front of spinnerets; laterally pink brown with 2 long white patches, first one broad; ventrally pink brown. Legs yellow brown with indistinct colour pattern; legs I–IV with coxa and trochanter white, proximal ½ of femora white and distal ½ sepia brown, darker brown lateral stripes on patella and tibia. *Eyes.* Pattern as in male. AME 0.20; ALE 0.14; PME 0.14; PLE 0.14; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.12; PME–PLE 0.12. MOQ: AME–PME 0.40; AME–AME 0.44; PME–PME 0.40. *Clypeus & chilum.* Clypeus 0.44 high; chilum undivided, long. *Legs.* Length formula 4123; metatarsus I with irregular band of short spines ventrally; femora III, IV with a row of 5–6 stout, dorsal spines at distal end; patella III, IV with 1 irregular, longitudinal row of stout spines prolaterally. *Male palp* (Figs. 42, 43, 47). RCF deep, ½ of the cymbium length; LTA with 2 long horns apically; DTA with a flattened stalk; VTA long with blunt tip. Tibiae short; with 1 long prolateral seta, and with group of bent spines retrolaterally; DTiA short rounded.

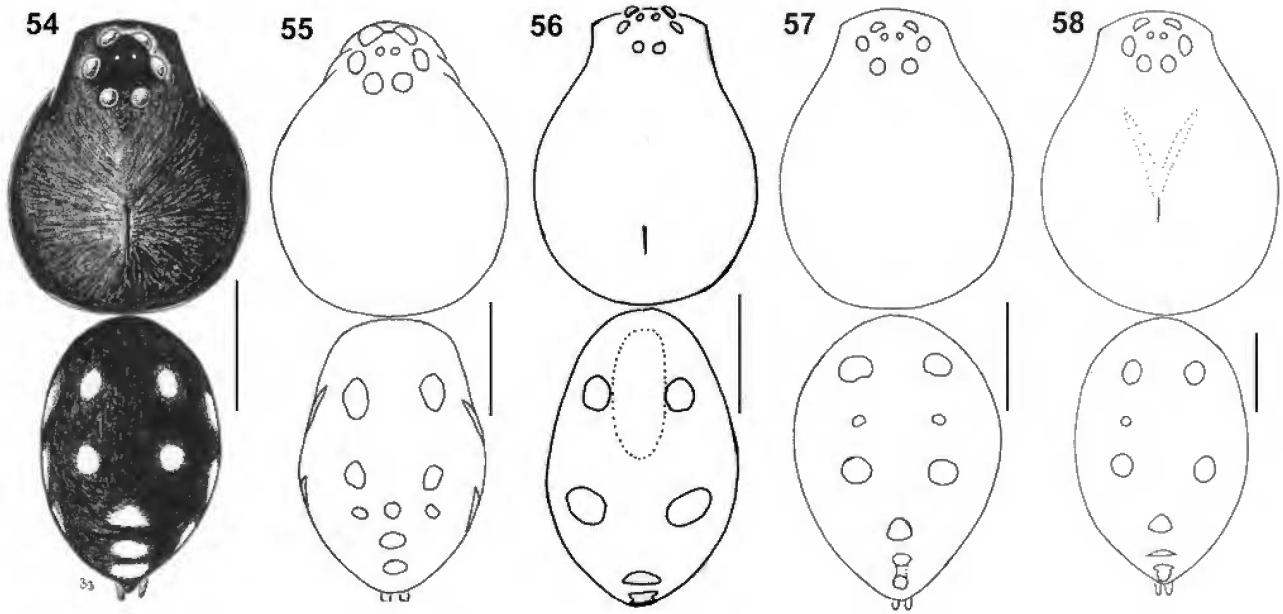
Female. Unknown.

Distribution. New South Wales (Fig. 139).

Etymology. Species name is an adjective taken from the type locality.



Figs. 51–53. Leg structures of *Habronestes* spp. (51–52) *Habronestes bradleyi* (Pickard-Cambridge): (51) claw with onychium, (52) tibia I proventral view, showing two rows of short feathery spines ventrally; (53) *Habronestes pseudoaustraliensis* n.sp., first tarsus (left side) with two rows of short ventral spines.



Figs. 54–58. *Habronestes pictus* species-group body, dorsal view: (54) *Habronestes monocornis* n.sp.; (55) *Habronestes bicornis* n.sp.; (56) *Habronestes jocquei* n.sp.; (57) *Habronestes raveni* n.sp.; (58) *Habronestes giganteus* n.sp. Scales 1 mm.

***Habronestes pictus* species-group**

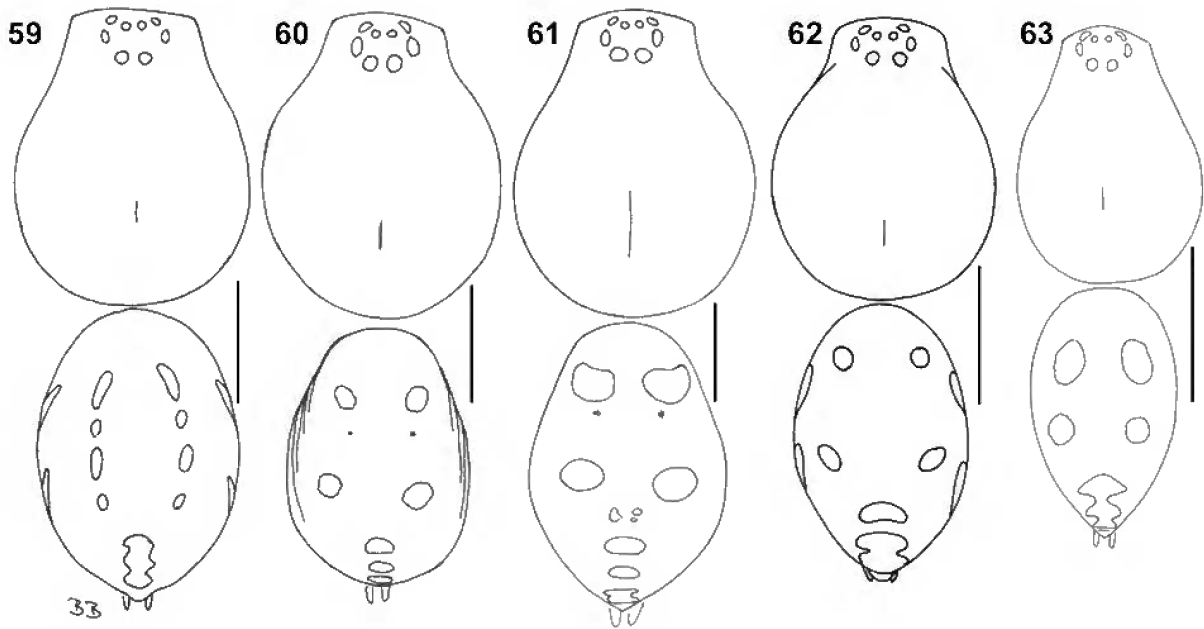
Diagnosis. Carapace not raised in front; AME or PME never largest eyes. Eyes in 2 rows, both rows procurved or in circular group. All eyes nearly equal-sized or AME smallest. Abdomen dark brown with 2–5 pairs of white patches on top, and 1–3 patches in front of spinnerets.

Description. *Male* (AM KS55869). Small to medium sized spiders (2.5–10.5) long. *Colour.* Carapace, sternum and chelicerae sepia brown or orange; maxillae, labium sepia brown, distally white. Abdomen sepia brown with 2–5 pairs of white patches on top and 1–3 patches in front of spinnerets; laterally with 1 or 2 undulating horizontal white stripes; ventrally, 1 longitudinal white stripe from epigastric fold to near tracheal spiracle or none. Legs yellow or pale brown; clearly annulated or with indistinct colour pattern. *Carapace.* Oval; finely reticulated; with lateral rim and longitudinal fovea. *Sternum.* Heart-shaped anteriorly

straight; with lateral rim, no lateral extensions; finely striated; with short and longer setae. *Eyes.* All eyes nearly equal-sized or AME smallest. In 2 rows each with 4 eyes, both rows procurved or circular around AME. *Mouthparts.* Chelicerae, without teeth but with rows of hairs, bordering mesial margin, dorsally with a few hairs and bristles, laterally with condyle. Maxillae triangular, with promarginal scopula and without serrula; labium triangular. *Abdomen.* Oval; with ordinary short hairs; ALS on common base, conical, with very short distal segment; PLS small, widely spaced with PMS in one row; PMS tiny; colulus tiny with some hairs. Tracheal spiracle small slit-like, with sclerotized cover. *Legs.* Length formula 4123; 3rd claw on onychium (Fig. 51). *Male palp* (Figs. 1, 2). RCF deep, 2/3 to whole of cymbium length. LTA with long vertical stalk and irregular horizontal plate; DTA with flattened or thin stalk and curled apical end covered with spicules; VTA sickle-shaped, long, with sharp or blunt tip; embolus thin and semicircular. Tibiae short with DTiA and VTiA.

Key to species of *H. pictus* species-group of New South Wales

- 1 Males 2
- Females 16
- 2 Tibia I with 2 rows of short, feathery spines or with a band of short spines ventrally (Figs. 52) 3
- Tibia I without special spines ventrally 5
- 3 Carapace orange iridescent. Tibia I with 2 rows of short, feathery ventral spines (Figs. 52). Palpal tibia without dorsolateral apophysis (Figs. 70, 71, 98) *H. bradleyi*
- Carapace dark brown. Tibiae and metatarsi I, II with a band of short spines ventrally 4
- 4 Cymbium laterally with conical spines. Metatarsus I with short, conical spines ventrally. Abdomen with 2 pairs of white patches and small scutum dorsally (Figs. 56, 68, 69) *H. jocquei*
- Cymbium without conical spines. Abdomen with 3 pairs of white patches (Figs. 65, 72, 73, 110) *H. hunti*



Figs. 59–63. *Habronestes pictus* species-group body, dorsal view: (59) *Habronestes helenae* n.sp.; (60) *Habronestes grayi* n.sp.; (61) *Habronestes longiconductor* n.sp.; (62) *Habronestes minor* n.sp.; (63) *Habronestes wilkiei* n.sp. Scales 1 mm.

- 5 Body length less than 3.8 mm, carapace less than 1.7 mm (Figs. 62, 63, 66) 6
- Body length more than 4.5 mm, carapace more than 2.2 mm (Figs. 54, 55, 57–61, 64, 67) 8
- 6 Cymbium bent, RCF reaches to tip of cymbium (Figs. 62, 84, 85, 103) *H. minor*
- RCF not as long as cymbium (Figs. 83–86) 7
- 7 With extremely dorsally long DTiA, retrolateral part of LTA points to tip of cymbium (Figs. 66, 80, 81, 100) *H. piccolo*
- Without dorsally elongate DTiA, retrolateral part of LTA points to base of cymbium (Figs. 63, 82, 83, 105) *H. wilkiei*
- 8 Eyes, AME smallest, others equal-sized (Figs. 54–61) 9
- Eyes equal-sized or AME and ALE smallest (Figs. 64–67) 15
- 9 Eyes in circular group around AME (Figs. 54–58) 10
- Eyes in 2 rows each with 4 eyes, both rows procurved (Figs. 59–61) 13
- 10 Cymbium extremely bent, RCF reaches to the tip of cymbium. Embolus originates retrolaterally (Figs. 58, 96, 97, 106). Carapace orange brown *H. giganteus*
- Cymbium not extremely bent, RCF about ¾ of cymbium length. Embolus originates ventrally (Figs. 77–82). Carapace dark brown 11
- 11 VTA partly hidden by LTA. Without deep excavation between DTiA and VTiA (Figs. 78, 79, 109) *H. raveni*
- VTA free, visible. Deep excavation between DTiA and VTiA (Figs. 77–80) 12
- 12 Abdomen with 3 pairs of white patches dorsally. DTiA basally longer than tibia. LTA retrolaterally with 2 horns (Figs. 55, 74, 75) *H. bicornis*
- Abdomen with 2 pairs of white patches dorsally. DTiA basally not longer than tibia. LTA retrolaterally with 1 horn (Figs. 54, 76, 77) *H. monocornis*

13	Cymbium extremely bent, RCF reaches to tip of cymbium. (Figs. 94, 95, 110)	<i>H. longiconductor</i>	
—	Cymbium not extremely bent, RCF shorter than cymbium (Figs. 86, 87, 90, 91)		14
14	Palpal DTiA extremely long, twice as long as tibia. LTA retrolaterally with wings and bifurcate. VTA hidden by LTA. Abdomen with 2 pairs of white patches dorsally (Figs. 60, 90, 91, 99)	<i>H. grayi</i>	
—	Palpal DTiA not long. LTA retrolaterally without wings. VTA free visible. Abdomen with 4 pairs of white patches dorsally (Figs. 59, 86, 87, 104)	<i>H. helenae</i>	
15	Abdomen with 5 pairs of white dots, 3 long and 2 small pairs dorsally. AME and ALE smallest. LTA with retrolateral tip pointed medially (Figs. 67, 92, 93, 108)	<i>H. pictus</i>	
—	Abdomen with 2 pairs of white patches, dorsally. All eyes about equal size. LTA with retrolateral tip pointed outwards (Figs. 64, 90, 88, 89, 89a, 102)	<i>H. grahami</i>	
16	(Females) Carapace orange iridescent, epigyne (Figs. 113, 114)	<i>H. bradleyi</i>	
—	Carapace dark brown, epigyne different (Figs. 111, 112, 118–140)		17
17	Body length less than 3.8 mm, carapace less than 1.7 mm (Figs. 62, 63, 66)		18
—	Body length more than 4.5 mm, carapace more than 2.2 mm (Figs. 54, 55, 57–61, 64, 67)		20
18	Epigyne with long lanceolate scape (Figs. 121, 122)	<i>H. piccolo</i>	
—	Epigyne without lanceolate scape (Figs. 123–126)		19
19	Epigyne with sausage-like spermathecae in heart-shaped pattern visible through the tegument (Figs. 123, 124)	<i>H. wilkiei</i>	
—	Epigyne with small v-shaped plate posteriorly. Vulva with long, spiralled copulatory ducts ending in large spermathecae (Figs. 125, 126)	<i>H. minor</i>	
20	AME smallest, others equal sized (Figs. 54–61)		21
—	Eyes equal sized or AME and ALE smallest (Figs. 64–67)		26
21	Eyes in circular group around AME (Figs. 54–58)		22
—	Eyes in 2 rows each with 4 eyes, both rows procurved (Figs. 59–61)		24
22	Epigyne with central opening at posterior margin. Vulva with kidney-shaped, medially touching copulatory ducts, ending in globular spermathecae (Figs. 119, 120)	<i>H. raveni</i>	
—	Epigyne with large paired halfmoon-shaped openings. Vulva with s-shaped copulatory ducts (Figs. 111, 112, 117, 118)		23
23	Epigyne, large paired halfmoon-shaped plates touching medially (Figs. 111, 112)	<i>H. jocquei</i>	
—	Epigyne, large paired halfmoon-shaped plates not touching medially (Figs. 117, 118)	<i>H. monocornis</i>	
24	Abdomen with 4 pairs of white patches dorsally. Posterior margin of epigyne sinuous (Figs. 59, 127, 128)	<i>H. helenae</i>	
—	Abdomen with 2 pairs of white patches dorsally. Posterior margin of epigyne not sinuous (Figs. 63, 64, 65, 115, 116, 129–132, 136, 137)		25
25	Epigyne medial with small inverted lanceolate hook. Copulatory ducts visible through tegument, anteriorly not touching (Figs. 136, 137)	<i>H. longiconductor</i>	

- Epigyne medial without lanceolate hook. Copulatory ducts visible through tegument anteriorly almost touching (Figs. 131, 132) *H. grayi*
- 26 Abdomen with line of 5 pairs of white patches dorsally. Epigyne plate w-shaped (Figs. 67, 133–135) *H. pictus*
- Abdomen with only 2–3 pairs of white patches dorsally. Epigyne plate not w-shaped (Figs. 64, 65, 115, 116, 129, 130) 27
- 27 Abdomen with a line of 3 pairs of white patches dorsally. Epigyne with extremely separate small semicircular openings posteriorly (Figs. 65, 115, 116) *H. hunti*
- Abdomen with a line of 2 pairs of white patches dorsally. Epigyne, with inverted v-shaped scape (Figs. 64, 129, 130) *H. grahami*

***Habronestes bradleyi* (Pickard-Cambridge, 1869)**

Figs. 1, 2, 51, 52, 70, 71, 98, 113, 114, 140

Storena bradleyi Pickard-Cambridge, 1869: 56, pl. 4, fig. 12–20 (description male); Kritscher, 1956: 246 (description female). *Habronestes bradleyi*.—L. Koch, 1872: 305 (description male); Jocqué, 1995: 143, figs. 2a,b (description male).

New Material examined. NSW: 1 ♀ Taleeban Woodland, 33°57'42"S 146°26'52"E, 23–27.ii.1999, DD, QM S50865; 1 ♀, QM S50912; 1 ♂ Bungonia Caves area near Information Centre, 34°48'2"S 150°0'57"E, xi.1989, on surface, Oct–Nov 1989, G. Hunt, AM KS22566; 19 ♂ ♂ Mt Lambic, 33°27'S 149°59'E, 13.xi.1988, road verge, G.S. Hunt, AM KS29940; 1 ♂ Rivatts Creek, Springwood, 33°38'S 150°40'E, 24.ii.1968, A. Speecheley, AM KS15627; 1 ♀ Currawong, 34°28'S 148°22'E, 25.ix.1966, AM KS15678; 2 ♀ ♀ 1 ♂ 2.x.1966, plus ant prey, AM KS15682; 4 ♀ ♀ 2 ♂ ♂ Enfield, 33°53'S 151°6'E, 22.ix.1904, E.P. Ramsay, AM KS15548; 1 ♀ Goulburn, 34°45'S 149°43'E, 26.x.1898, J.A. Thorpe, AM KS15550; 1 ♀ Karuah SF, 0.1 km W along Hobart Forest Rd from Foleys Rd, 32°35'12"S 151°55'14"E, 4.ii–9.iv.1993, G/C, AM KS39431.

Remarks. Jocqué (1995) identified the material from the AM as *H. bradleyi* (AM KS20238) and *H. grimwadei* (AM KS29940, AM KS22566) and presented palpal drawings of both. Re-examination of the specimens did not reveal any differences in palp and body structure, which was confirmed by M. Gray and M. Zabka (pers. comm.). In contrast the holotype male from WA (40 mi W of Eucla, 30.8.1947, R.T.M.P. (Grimwade Exped.). (NVM K-113) (examined) and paratype: 1 ♀ (NVM K-114) (examined) described from Dunn as *Storena grimwadei* Dunn, 1951: 11, figs. 1–4 (descriptions male and female) is a different species. Hence, the specimens of AM KS29940, AM KS22566 are identified as *H. bradleyi*.

Diagnosis. Carapace orange, blue iridescent. Eyes in 2 rows, both rows procurved, PME and PLE largest. Abdomen with 2 pairs of white patches on anterior part, the first small, the second long and 1 long white stripe in front of spinnerets. Tibia I with 2 rows of feathery spines proventrally. LTA with a long broad horizontal stalk and bilateral wings retrolaterally, which is similar to *H. grayi* n.sp.

Description. *Male.* Total length 4.52; carapace 2.32 long, 1.88 wide; 1.00 high; cl/cw 1.23; sternum 1.04 long, 1.00 wide; sl/sw 1.04. Abdomen 2.2 long, 1.64 wide. *Colour.* Carapace orange, blue, iridescent with dark fovea and dark bifurcate patches in front; sternum orange brown, iridescent; chelicerae yellow orange; maxillae and labium yellowish orange, distally white. Abdomen sepia brown, blue iridescent with 2 pairs of white patches on anterior part, first small, second long and 1 long, white stripe in front of spinnerets; laterally with 1 long, horizontal white stripe reaching front. Legs yellow, iridescent; with indistinct

colour pattern; legs I–IV with pale coxa, prolateral suture brownish, medium brown trochanter, medium brown femur; with darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. PME largest and PLE largest. Eye group width 0.45 of headwidth; AME 0.08; ALE 0.08; PME 0.12; PLE 0.12; AME–AME 0.06; AME–ALE 0.06; ALE–PLE 0.06; PME–PME 0.10; PME–PLE 0.10. MOQ: AME–PME 0.40; AME–AME 0.22; PME–PME 0.34. *Clypeus & chilum.* clypeus 0.56 high; chilum undivided, short. *Legs.* Length formula 4312; femora I–II with 1 row, femora III–IV with 2 rows of long, thin setae ventrally; tibia and metatarsus I with 2 rows of short, feathery spines proventrally (Fig. 52); *Male palp* (Figs. 1, 2, 70, 71, 98). RCF deep, almost running the entire cymbium length, with 3 strong spines apically; tegulum: LTA with a long broad horizontal stalk and bilateral wings retrolaterally; DTA with a thin stalk (Fig. 1); VTA with sharp tip. Tibiae short; VTiA (Fig. 71).

Female (QM S50865). Total length 5.50; carapace 2.66 long, 2.08 wide; 1.12 high; cl/cw 1.28; sternum 1.20 long, 1.12 wide; sl/sw 1.07. Abdomen 2.83 long, 2.50 wide. *Colour.* Same as male. *Eyes.* As in male. Eye group width 0.49 of headwidth; AME 0.10; ALE 0.10; PME 0.14; PLE 0.14; AME–AME 0.04; AME–ALE 0.08; ALE–PLE 0.08; PME–PME 0.12; PME–PLE 0.12. MOQ: AME–PME 0.40; AME–AME 0.24; PME–PME 0.40. Clypeus 0.8 high. *Legs.* Same as male except tibia and metatarsus I without feathery spines. *Epigyne.* With oval to semicircular opening. Vulva with long, spiralled copulatory ducts ending in spermathecae with parallel axis (Figs. 113, 114).

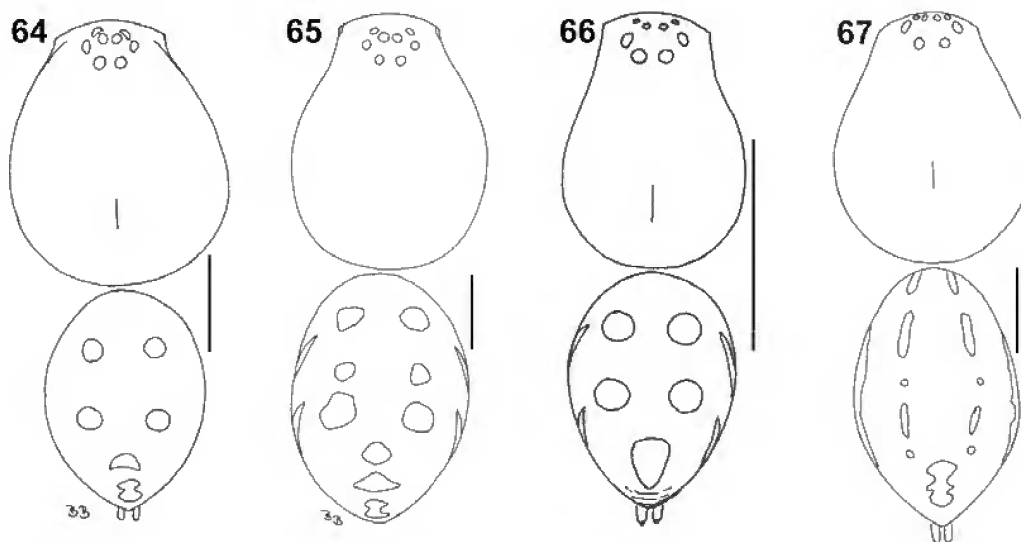
Distribution. New South Wales (Fig. 140), Victoria, Western Australia, Queensland.

***Habronestes bicornis* n.sp.**

Figs. 55, 74, 75, 142

Type material. HOLOTYPE ♂: NSW, Wilganea Station 5.5 km NW of homestead 90 km N of Bourke, 29°21'16"S 146°16'59"E, 13.iii.1993, open woodland, Mulga, Bimblebox, Silverleafed Ironbark, 9–16 Mar 1993, L. Gibson, AM KS83933. PARATYPES, all same data as holotype: 5 ♂ ♂ AM KS45257, 1 ♂ QM S60826, 1 ♂ AM KS45258, 1 ♂ AM KS45259, 4 ♂ ♂ AM KS45264.

Diagnosis. Eyes in circular group around AME, AME smallest, other eyes subequal. Abdomen with 3 pairs of white patches on anterior part and 3 or 4 patches in front of spinnerets. Palp, DTiA basally longer than tibia. LTA retrolaterally with 2 horns.



Figs. 64–67. *Habronestes pictus* species-group body, dorsal view: (64) *Habronestes grahami* n.sp.; (65) *Habronestes hunti* n.sp.; (66) *Habronestes piccolo* n.sp.; (67) *Habronestes pictus* (Koch). Scales 1 mm.

Description. *Male* (holotype). Total length 4.92; carapace 2.56 long, 2.00 wide; 1.08 high; cl/cw 1.28; sternum 1.20 long, 1.04 wide; sl/sw 1.15. Abdomen 2.36 long, 1.68 wide. *Colour.* Carapace sepia brown, iridescent; sternum sepia brown; chelicerae medium brown; maxillae and labium medium brown, distally white. Abdomen sepia brown with 3 pairs of white patches on anterior part and 3 or 4 patches in front of spinnerets; laterally with 2–3 long and broad white patches. Legs medium brown; clearly annulated; leg I, as legs II–IV but sepia brown femur; legs II–IV, white coxa, distally sepia brown, sepia brown trochanter, proximal $\frac{1}{3}$ – $\frac{1}{2}$ of femora white and distally sepia brown with darker brown lateral stripes on patella and tibia. *Eyes.* In circular group around AME. AME smallest, other eyes equal. Eye group width 0.68 of headwidth; AME 0.10; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.04; AME–ALE 0.08; ALE–PLE 0.10; PME–PME 0.06; PME–PLE 0.10. MOQ: AME–PME 0.44; AME–AME 0.24; PME–PME 0.42. *Clypeus & chilum.* Clypeus 0.52 high; chilum undivided, long. *Legs.* Length formula 4123; femora I, II with 1 row, femora III, IV with 2 rows of long, thin setae ventrally. *Male palp* (Figs. 74, 75). RCF deep, $\frac{2}{3}$ cymbium length, cymbium with weak dorsal scopula and 4 strong spines apically; LTA with a thick, short vertical stalk, an irregular horizontal plate and 2 horns retrolaterally; DTA with a thin stalk; VTA broad, with sharp tip. Tibia short; DTiA large, basally longer than tibia, directed proximally with extremely deep concavity; VTiA (Fig. 75).

Female. Unknown.

Distribution. Known only from type locality in north-western New South Wales (Fig. 142).

Etymology. Species name is chosen because of the two horns on the retrolateral part of the LTA in the male palp.

Habronestes giganteus n.sp.

Figs. 58, 96, 97, 106, 140

Type material. HOLOTYPE ♂: NSW, Round Hill, Euabalong, 32°58'S 146°9'E, 15.v.1969, in gum litter, running by day (dull damp), M.R. Gray, AM KS50265. PARATYPES same data as holotype: 1♂ AM KS50264; 1♂ as previous but coll. 13.v.1972, AM KS50257.

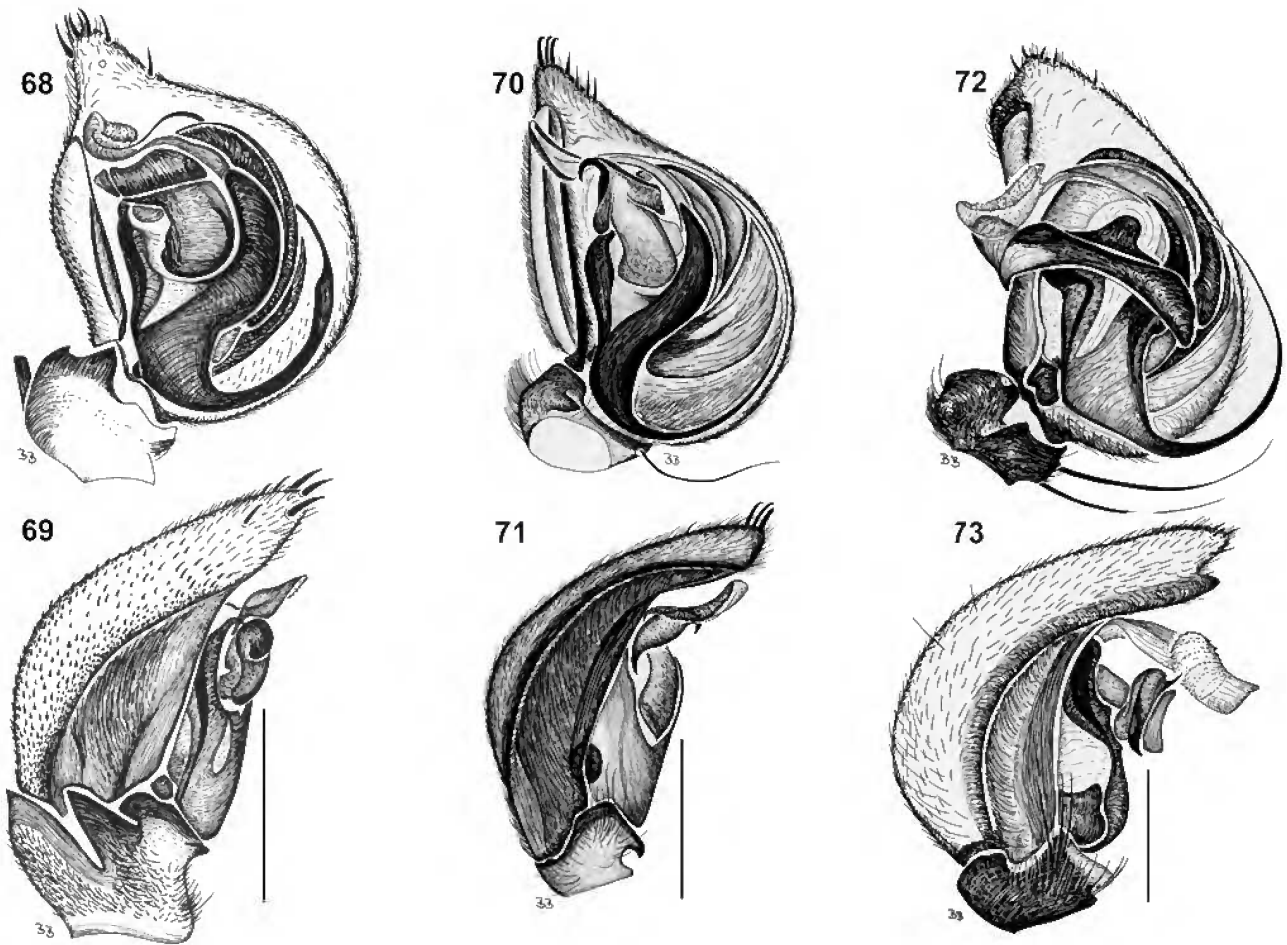
Diagnosis. Eyes in circular group around AME; AME smallest, other eyes subequal. Carapace orange brown. Abdomen with 2 pairs of white patches on anterior part and 3 patches in front of spinnerets. Big palp, cymbium extremely bent, RCF reaches over tip, similar to *H. longiconductor* but differs by shape of LTA.

Description. *Male* (holotype). Total length 6.84; carapace 3.68 long, 2.84 wide; 1.64 high, cl/cw 1.29; sternum 1.76 long, 1.56 wide, sl/sw 1.13. Abdomen 3.16 long, 3.28 wide. *Colour.* Carapace orange brown with dark fovea and dark bifurcate patches in front; sternum orange brown; chelicerae reddish brown; maxillae and labium medium brown, distally white. Abdomen sepia brown with 2 pairs of white patches on anterior part and 3 patches in front of spinnerets; laterally with 2 long white patches equal in length; ventrally with 1 longitudinal white stripe from epigastric fold to near tracheal spiracle. Legs orange brown; clearly annulated; legs I–IV with white coxa, proximal and prolateral sepia brown, sepia brown trochanter, sepia brown femur; femur IV additionally at proximal $\frac{1}{3}$ with a white ring. *Eyes.* In circular group around AME. AME smallest, other eyes subequal. AME 0.10; ALE 0.24; PME 0.18; PLE 0.26; AME–AME 0.10; AME–ALE 0.10; ALE–PLE 0.08; PME–PME 0.16; PME–PLE 0.10. MOQ: AME–PME 0.54; AME–AME 0.3; PME–PME 0.52. *Clypeus & chilum.* Clypeus 0.8 high; chilum divided. *Legs.* Length formula 4123; femora I, II with 1 row and femora III, IV with 2 rows of long, thin setae ventrally. *Male palp* (Figs. 96, 97, 106). RCF deep, running the entire cymbium length; from lateral view cymbium extremely bent with weak dorsal scopula and 4 strong spines apically. LTA with long, vertical stalk and irregular, horizontal plate (Fig. 106); DTA with a thin stalk; VTA long, with sharp tip. Tibiae short, DTiA as long as VTiA (Fig. 97).

Female. Unknown.

Distribution. Known only from type locality in western New South Wales (Fig. 140).

Etymology. Species name refers to the extremely large palps of the species.



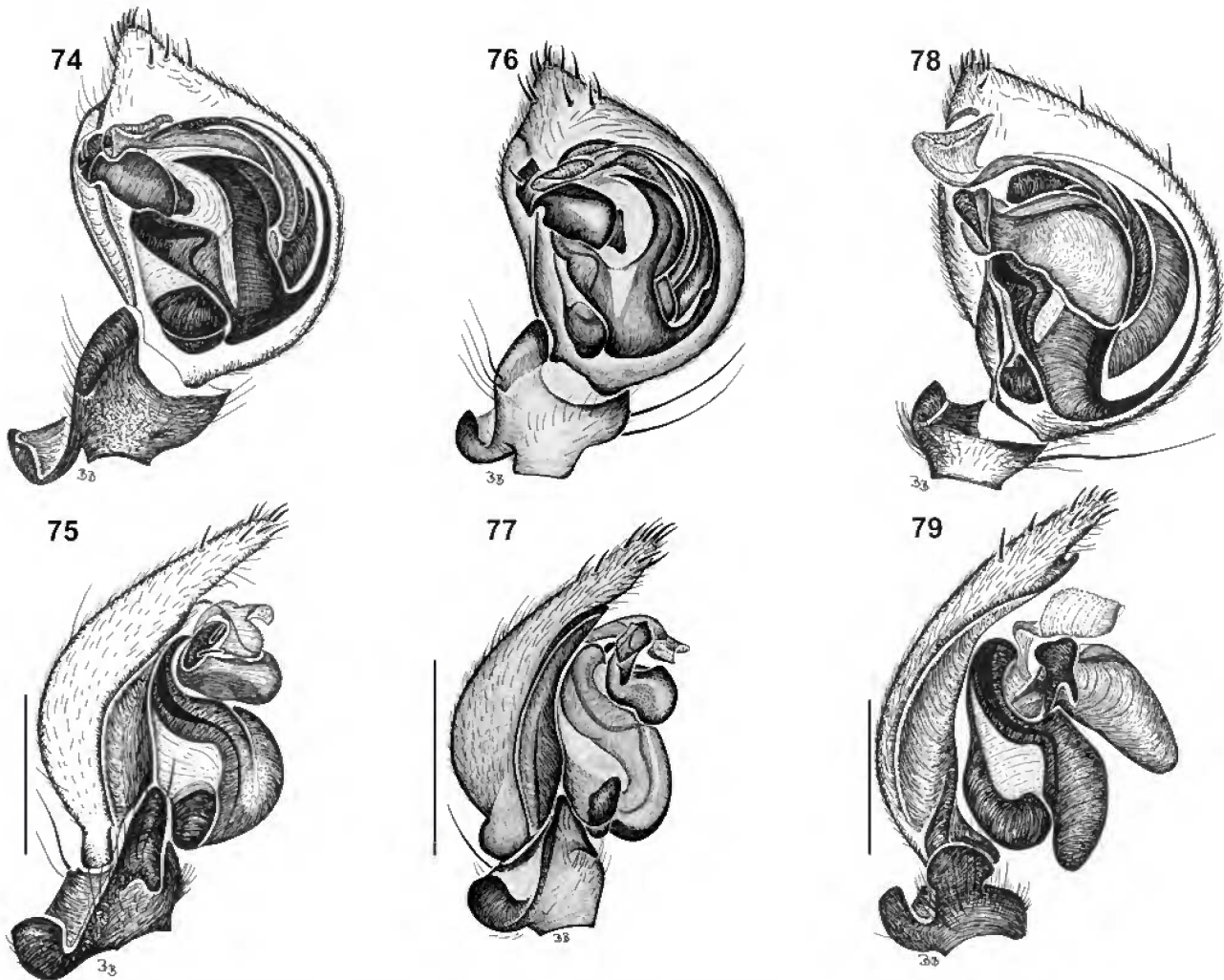
Figs. 68–73. *Habronestes pictus* species-group male palps, ventral view (above), lateral view (below): (68, 69) *Habronestes jocquei* n.sp.; (70, 71) *Habronestes bradleyi* (Pickard-Cambridge); (72, 73) *Habronestes huntii* n.sp. Scales 0.5 mm.

***Habronestes grahami* n.sp.**

Figs. 64, 88, 89, 102, 129, 130, 140

Type material. HOLOTYPE ♂: NSW, Mount Brown Rd (0.1 km N from intersection at Mt Brown) 28°37'S 152°43'E, Richmond Range SF, 480 m, North East Forests Biodiversity Study (NSW NPWS) G/C, AM KS83929. PARATYPES: 1 ♀ as holotype, AM KS36027; 1 ♂, 1 ♀, 0.5 km from Wheatley Ck Rd on Camp Ck Rd, leasehold land, 28°47'0"S 152°19'29"E, 4.ii–9.iv.1993, 550 m, G/C, AM KS36270. 1 ♀, 2 ♂♂, 240 m E of jctn of Kunderang East & Kunderang West Rds, 30°48'53"S 152°2'9"E, 4.ii–9.iv.1993, 900 m, G/C, AM KS39106; 3 ♂♂ Barrington Tops SF, 1.3 km along Bungaree Trail from Barrington Tops Forest Rd, 31°56'44"S 151°21'9"E, 4.ii–9.iv.1993, 1180 m, G/C, AM KS39460; 23 ♂♂ Beaury SF, Rocky Waterholes Rd, 28°32'49"S 152°20'11"E, 4.ii–9.iv.1993, 705 m, G/C, AM KS36148; 2 ♂♂ Bondi SF, S of Bombala, 37°8'S 149°9'E, 27.x.1980, Woodlot Survey, AM KS45436; 1 ♂ 25.x.1980, litter, open forest, WL1 DIV5, Woodlot Survey, G. Gowing *et al.*, AM KS11003; 2 ♂♂ DIV3, further as previous, AM KS11007; 1 ♂ DIV 4, AM KS11025; 1 ♀ Boorook SF, 1 km E of main road, 28°49'20"S 152°11'14"E, 4.ii–9.iv.1993, 900 m, G/C AM KS36309; 1 ♀ Boundary Ck SF, SW along Boundary Ck Rd from jctn of Dungle & Shannon Ck Rds, 29°56'48"S 152°33'27"E, 4.ii–9.iv.1993, 600 m, G/C, AM KS39030; 1 ♂ Bulga SF, Padmans Rd, nr intersection of Pole Dump Rd, 31°36'58"S 152°10'39"E, 4.ii–9.iv.1993, 730 m, G/C, AM KS39462; 1 ♀ Bulls Ground SF nr Wauchope, 31°33'S 152°38'E, 10.ii.1991, dry euc. open forest, Plot 6B3–burnt, 6–13 Feb 1991, A. York, NSW Forestry, AM KS43350; 2 ♂♂ Carrai SF, Block & Tackle Ridge, 500 m from Carrai Rd, 31°36'54"S 152°23'41"E, 4.ii–9.iv.1993, 540 m, G/C, AM KS39461; 1 ♂ Chaelundi SF, 1.2 km W along Stockyard from Chandlers Ck, 29°56'48"S 152°31'46"E, 4.ii–9.iv.1993, 450 m, G/C, AM KS39458; 1 ♂ Dorrigo NP, off Dorrigo-Bellingen Rd, about 20 km from Bellingen (to E of rd) about 500 m S of Newell Falls, 30°23'55"S 152°44'56"E, 4.ii–9.iv.1993, 410

m, G/C, AM KS35632; 2 ♂♂ East Kunderang Trail, 1.35 km E of West Kunderang Trail, 30°48'41"S 152°2'55"E, 4.ii–9.iv.1993, 890 m, G/C, AM KS55993; 2 ♂♂ Gilgurry SF, Rivertree Fire Trail, on ridge 2 km NNE from t/o, 28°45'18"S 152°15'52"E, 4.ii–9.iv.1993, 770 m, G/C, AM KS36247; 1 ♂ Glen Davis, 33°8'S 150°17'E, 31.v.1982, litter, 19 May–14 Jun 1982, B. Henke, AM KS10106; 3 ♀♀ Mt Hyland Nature Reserve, 1.9 km N on Chaelundi Rd from Big Bull Rd, 30°8'55"S 152°26'36"E, 4.ii–9.iv.1993, 1160 m, G/C, AM KS35614; 1 ♂ Mt Kosciusko, Island Bend, 36°19'S 148°29'E, 24.xi.1952, 455 m, J. Armstrong, AM KS15703; 2 ♂♂ Nadgee Nature Reserve, 37°22'S 149°55'E, 24.v.1978, in litter, 24 Feb–24 Jul 1978, G. Gowing, AM KS1610; 1 ♀ Ramornie SF, Mt Tindal Rd, 29°41'49"S 152°35'0"E, 4.ii–9.iv.1993, 490 m, G/C, AM KS39133; 1 ♀ Ramornie SF, track off Mt Tindal Rd, 29°42'41"S 152°37'36"E, 4.ii–9.iv.1993, 220 m, G/C, AM KS39130; 3 ♀♀ Ramornie SF, track off Mt Tindal Rd, 29°42'38"S 152°38'9"E, 4.ii–9.iv.1993, 200 m, G/C, AM KS39132; 2 ♀♀ Ramornie SF, T-ridge Rd, 29°43'13"S 152°33'38"E, 4.ii–9.iv.1993, 300 m, G/C, AM KS39131; 1 ♂ Richmond Range SF, jctn of Wattle Ck Rd and Wattle Ck, 28°38'9"S 152°46'40"E, 4.ii–9.iv.1993, 130 m, G/C, AM KS36044; 1 ♂ Ridge between Camp Ck and Stydy Ck, leasehold land, 28°46'18"S 152°18'8"E, 4.ii–9.iv.1993, 640 m, G/C, AM KS36241; 2 ♂♂ Round Hill, Euabalong, 32°58'S 146°9'E, 13.v.1972, M.R. Gray, AM KS49141; 1 ♀, 1 ♂, Royal National Park, Sydney, 34°8'S 151°4'E, 22.vi.1969, R. Mascord, AM KS15683; 3 ♂♂ Stewarts Brook SF, 0.7 km W along unnamed logging track from Omadale Brook Rd, 31°54'16"S 151°23'36"E, 4.ii–9.iv.1993, 1250 m, G/C, AM KS39459; 1 ♀ Styx River SF off Cunnamurra Trail, about 2 km N Cunnamurra Ck, 30°32'49"S 152°20'16"E, 4.ii–9.iv.1993, 1070 m, G/C, AM KS35626; 2 ♂♂ Washpool NP, North West Fire Trail, 29°27'36"S 152°17'25"E, 4.ii–9.iv.1993, 950 m, G/C, AM KS36406; 23 ♂♂ Washpool NP, North West Fire Trail, 29°27'30"S 152°16'52"E, 4.ii–9.iv.1993, 950 m, G/C, AM KS36417; 1 ♂ 20 km N of Burcher on road to Manna Mountain, 33°22'12"S 147°15'2"E, 25.iii.1996, roadside corridor vegetation N5 trap B1, 21–28 Mar 1996, D. Smith & R. Harris, AM KS56121; 1 ♂ Booti



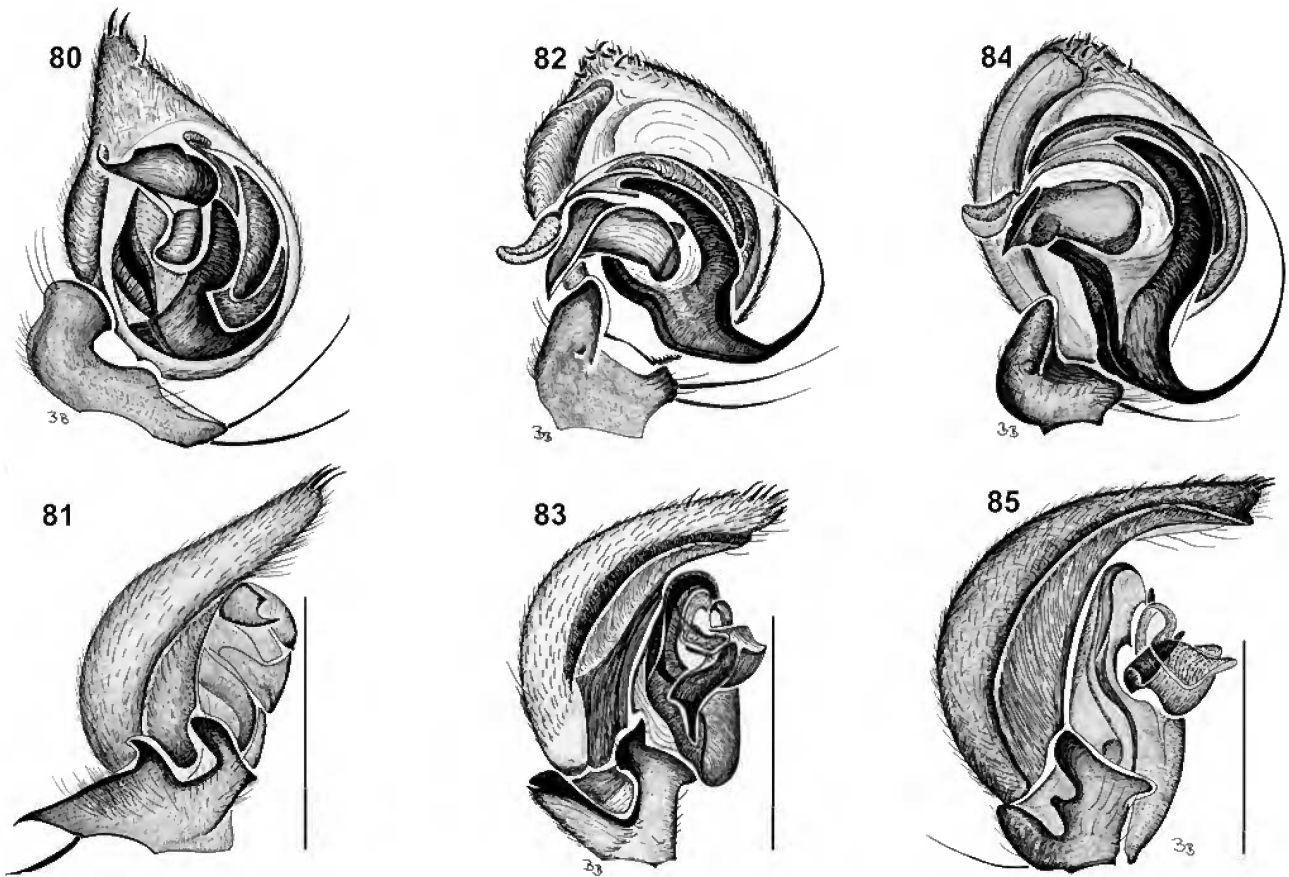
Figs. 74–79. *Habronestes pictus* species-group male palps, ventral view (above), lateral view (below). (74, 75) *Habronestes bicornis* n.sp.; (76, 77) *Habronestes monocornis* n.sp.; (78, 79) *Habronestes raveni* n.sp. Scales 0.5 mm.

Booti NP, 32°16'15"S 152°31'42"E, 25.xi.1997, L. Wilkie, AM KS55939; 1♂, AM KS55953; 1♂, as previous, AM KS55959; 1♀ as previous but 13.xii.1996, AM KS55968; 1♀ Mummel Forest Rd, 7.6 km N of Enfield Forest Rd, Enfield SF, 31°17'S 151°51'E, 9.iv.1993, 1340 m, G/C, AM KS56063; 1♂ Myall Lakes NP, 32°29'22"S 152°23'53"E, 13.iv.1998, L. Wilkie, AM KS56108; 1♀ as previous, AM KS56109; 1♂ as previous but 24.v.1998, AM KS56045; 1♀, as previous, AM KS56043; 1♀ Wyrrabalong NP, 33°16'44"S 151°32'51"E, 27.xi.1997, L. Wilkie, AM KS56011; 1♂ Wyrrabalong NP, 33°16'47"S 151°32'40"E, 2.v.1997, L. Wilkie, AM KS55933. The following in AM with same data as previous: 1♂ KS56036; 1♂ KS56038; 1♂ KS56118; 1♂ 15.iv.1998, KS55987; 1♂ 23.v.1998, KS56072; 1♀, AM KS56064. ACT: 1♀, 9♂ Tidbinbilla Nature Reserve, 35°28'S 148°52'E, 9.iii.1978, PO ref site 11, P. Ormay, AM KS13834.

Diagnosis. Eyes equal-sized, in 2 rows each with 4 eyes, both rows procurved. Abdomen with 2 pairs of white patches on anterior part and 1 or 2 patches in front of spinnerets. LTA with a thick, short vertical stalk and irregular horizontal plate, bird head shape retrolaterally. Epigyne with scape originating from central opening at posterior margin.

Description. *Male* (holotype). Total length 5.20; carapace 2.84 long, 2.20 wide; 0.96 high; cl/cw 1.29; sternum 1.24 long, 1.04 wide; sl/sw 1.19. Abdomen 2.36 long, 1.80 wide. **Colour.** Carapace, sternum sepia brown, iridescent; chelicerae reddish brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 pairs of white

patches on anterior part and 2 patches in front of spinnerets (Fig. 67); laterally with 2 long white patches equal in length; ventrally with 1 longitudinal white stripe from epigastric fold to near tracheal spiracle. Legs orange brown; clearly annulated; legs I–IV with white coxa, prolateral suture sepia brown, medium brown trochanter, proximal margin of femora sepia brown, proximal ½ white and distal ½ sepia brown, darker brown lateral stripes on patella and tibia; femur I with u-shaped pattern. **Eyes.** In 2 rows each with 4 eyes, both rows procurved. Nearly equal-sized. Eye group width 0.50 of headwidth; AME 0.12; ALE 0.12; PME 0.13; PLE 0.13; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.06; PME–PLE 0.10. MOQ: AME–PME 0.38; AME–AME 0.28; PME–PME 0.32. **Clypeus & chilum.** Clypeus 0.72 high; chilum undivided short. **Abdomen.** Oval; with stout bristles in front of tracheal spiracle. **Legs.** Length formula 4123; femora I, II with 1 row and femora III, IV with 2 rows of long thin setae ventrally. **Male palp** (Figs. 88, 89, 89a, 102). RCF deep, almost running the entire cymbium length; cymbium with a few strong spines apically. LTA with a thick, short, vertical stalk and irregular horizontal plate; DTA with a thin stalk; VTA sickle-shaped, long, with sharp tip. Tibiae short; DTiA with sharp tip, as long as tibia; VTiA (Fig. 89).



Figs. 80–85. *Habronestes pictus* species-group male palps, ventral view (above), lateral view (below): (80, 81) *Habronestes piccolo* n.sp.; (82, 83) *Habronestes wilkiei* n.sp.; (84, 85) *Habronestes minor* n.sp. Scales 0.5 mm.

Female (paratype AM KS35626). Total length 5.80; carapace 2.68 long, 1.72 wide; 1.08 high; cl/cw 1.20; sternum 1.20 long, 1.12 wide; sl/sw 1.07. Abdomen 3.12 long, 2.00 wide. *Colour*. Same as male. *Eyes*. Eye group width 0.51 of headwidth; AME 0.12; ALE 0.12; PME 0.14; PLE 0.14; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.06; PME–PLE 0.08. MOQ: AME–PME 0.34; AME–AME 0.28; PME–PME 0.34. *Clypeus & chilum*. Clypeus 0.6 high; chilum divided. *Epigyne* (Figs. 129, 130). With scape originating from central opening at posterior margin. Kidney-shaped and posteriorly touching copulatory ducts are visible through the tegument. Vulva with long, spiralled copulatory ducts ending in oval, medially touching spermathecae.

Variation. Males of this widespread species show some variation in the shape of palpal tibial apophysis (Fig. 89a).

Distribution. Widespread in New South Wales and ACT (Fig. 140).

Etymology. Species name is a patronym in honour of Mr Graham Milledge, the collection manager of Arachnology at the Australian Museum, who provided valuable technical assistance during this project.

Habronestes grayi n.sp.

Figs. 60, 90, 91, 99, 131, 132, 140

Type material. HOLOTYPE ♂: NSW, Ramornie SF, track off Mt Tindal Rd, 29°42'41"S 152°37'36"E, 4.ii–9.iv.1993, 220 m, G/C, AM KS83931. PARATYPES: 10 ♂ same data as holotype, AM KS39194; 1 ♂ as previous, AM KS56167; 2 ♀, 10 ♂ Boundary Ck SF, 0.45 km along Boundary Ck Rd from jctn of Dungal & Shannon Ck Rds, 29°56'48"S 152°33'27"E, 4.ii–9.iv.1993, 600 m, G/C, AM KS39193, 1 ♂ as previous, QM S60827; 13 ♂ Boundary Ck SF, 1 km N along Joebill Rd from Shannon Ck Rd, 29°56'13"S 152°33'12"E, 4.ii–9.iv.1993, 630 m, G/C, AM KS39196; 6 ♂ Boundary Ck SF, Shannon Ck, Shannon Ck Rd, 29°57'18"S 152°35'37"E, 4.ii–9.iv.1993, 300 m, G/C, AM KS39197; 1 ♂ Ramornie SF, track off Mt Tindal Rd, 29°43'1"S 152°38'24"E, 9.iv.1993, 4.ii–9.iv.1993, 110 m, G/C, AM KS56169; 1 ♀ Ramornie SF, track off Mt Tindal Rd, 29°42'S 152°38'E, 9.iv.1993, 4.ii–9.iv.1993, G/C, AM KS56171; 23 ♂ Ramornie SF, track off Mt Tindal Rd, 29°42'38"S 152°38'9"E, 4.ii–9.iv.1993, 200 m, G/C, AM KS39195.

Diagnosis. Eyes in 2 rows, both rows procurved, PME and PLE largest. Abdomen with 2 pairs of large white patches on top and 3 patches in front of spinnerets. Extremely long DTiA; LTA with a long, broad horizontal stalk and irregular plate with bilateral wings retrolaterally, similar to *H. bradleyi*. Epigyne with paired broad-oval openings.

Description. *Male* (holotype). Total length 6.88; carapace 3.60 long, 2.68 wide; 1.20 high; cl/cw 1.34; sternum 1.76

long, 1.48 wide; sl/sw 1.18. Abdomen 3.28 long, 2.28 wide. *Colour*. Carapace, sternum and chelicerae sepia brown; maxillae and labium sepia brown, distally white. Abdomen sepia brown with 2 pairs of large white patches and 3 patches in front of spinnerets; laterally with 2 long white patches equal in length; ventrally with 1 longitudinal white stripe from epigastric fold to near tracheal spiracle. Legs yellow brown; clearly annulated; legs I–IV with white coxa, sepia brown trochanter, proximal $\frac{2}{3}$ – $\frac{1}{2}$ of femora white and distal part sepia brown, sepia brown patella; *Eyes*. In 2 rows each with 4 eyes, both rows procurved. AME smallest, other eyes equal. Eye group width 0.53 of headwidth; AME 0.16; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.08; PME–PLE 0.10. MOQ: AME–PME 0.54; AME–AME 0.36; PME–PME 0.44. *Clypeus & chilum*. Clypeus 0.8 high; chilum divided. *Legs*. Length formula 4123; femora I, II with 1 row and III, IV with 2 rows of long thin setae ventrally. *Male palp* (Figs. 90, 91, 99). RCF deep almost running the entire cymbium length. LTA with a long broad horizontal stalk and irregular plate with bilateral wings retrolaterally; DTA with a flattened stalk; VTA, long, with sharp tip. Tibia short; DTiA twice as long as tibia; VTiA (Fig. 91).

Female (paratype AM KS39193). Total length 7.84; carapace 3.44 long, 2.32 wide; 1.20 high; cl/cw 1.48; sternum 1.60 long, 1.44 wide; sl/sw 1.10. Abdomen 4.40 long, 3.08 wide. *Colour*. Same as male. *Eyes*. AME smallest, other eyes equal. Eye group width 0.51 of headwidth; AME 0.14; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.06; AME–ALE 0.04; ALE–PLE 0.06; PME–PME 0.08; PME–PLE 0.12. MOQ: AME–PME 0.54; AME–AME 0.34; PME–PME 0.44. Clypeus 0.8 high. *Epigyne* (Figs. 131, 132). With paired broad-oval openings. Copulatory ducts anteriorly visible through the tegument. Vulva with long, spiralled copulatory ducts ending in pear-shaped, posteriorly touching spermathecae.

Distribution. Northeastern New South Wales (Fig. 140).

Etymology. The species name is a patronym honouring Dr Michael Gray of the Australian Museum, in esteem for his important work on Australian spiders.

Habronestes helenae n.sp.

Figs. 59, 86, 87, 104, 127, 128, 141

Type material. HOLOTYPE ♂: NSW, Dipper Rd, Pilliga Nature Reserve, 30°40'S 148°50'E, 26.iii.1997, H. Smith & R. Harris, AM KS83935. PARATYPES: 1 ♀ same data as holotype, AM KS55696; 1 ♂ Munmorah Recreation Reserve, Geebung camping area, 33°13'S 151°34'E, 3.iv.1987, M.R. Gray, AM KS17134.

Diagnosis. Eyes in 2 rows, both rows procurved, AME smallest, other eyes subequal. Abdomen with 4 pairs of white patches and 1 long patch in front of spinnerets. LTA massive. Epigyne with paired circular openings.

Description. *Male* (holotype). Total length 5.24; carapace 2.72 long, 2.00 wide; 1.32 high; cl/cw 1.36; sternum 1.24 long, 1.12 wide; sl/sw 1.11. Abdomen 2.52 long, 1.76 wide. *Colour*. Carapace chestnut brown; sternum pale yellow brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown, iridescent; with 4 pairs of white patches on top and 1 long patch in front of spinnerets; laterally pink brown with 2–3 long and

broad white patches; ventrally pale pink brown. Legs yellow brown; clearly annulated; leg I with white coxa, distal angles sepia brown, sepia brown trochanter, sepia brown femur, darker brown lateral stripes on patella and tibia, proximal half of tibiae white. Legs II–IV same except proximal $\frac{1}{3}$ of femora II white and distal $\frac{2}{3}$ sepia brown with proximal $\frac{1}{2}$ of femora III, IV white and distal $\frac{1}{2}$ sepia brown. *Eyes*. In 2 rows each with 4 eyes, both rows procurved. AME smallest, other eyes subequal. Eye group width 0.52 of headwidth; AME 0.12; ALE 0.14; PME 0.14; PLE 0.14; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.06; PME–PME 0.08; PME–PLE 0.10. MOQ: AME–PME 0.40; AME–AME 0.28; PME–PME 0.34. *Clypeus & chilum*. Clypeus 0.6 high; chilum undivided, short. *Legs*. Length formula 4123; femora I, II with 1 row II, IV with 2 rows of long, thin setae ventrally. *Male palp* (Figs. 86, 87, 104). RCF deep $\frac{3}{4}$ of the cymbium length; cymbium with a few strong spines apically; LTA with a thick, short vertical stalk, and an irregular horizontal plate. DTA with a thin, long stalk. VTA long, with sharp tip. Tibiae short; with 2 long prolateral setae; DTiA short rounded; VTiA (Fig. 87).

Female (paratype AM KS55696). Total length 6.48; carapace 2.88 long, 1.96 wide; 1.04 high; cl/cw 1.46; sternum 1.36 long, 1.28 wide; sl/sw 1.06. Abdomen 2.52 long, 1.76 wide. *Colour*. Same as male. *Eyes*. Eye group width 0.5 of headwidth; AME 0.12; ALE 0.16; PME 0.16; PLE 0.16; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.06; PME–PME 0.08; PME–PLE 0.14. MOQ: AME–PME 0.44; AME–AME 0.28; PME–PME 0.40. Clypeus 0.64 high. *Epigyne* (Figs. 127, 128). With paired circular openings. Copulatory ducts anteriorly visible through the tegument. Vulva with long, spiralled copulatory ducts ending in large, oval touching spermathecae.

Distribution. Near coastal to western New South Wales (Fig. 141).

Etymology. Species name is a patronym in honour of Ms Helen Smith of the Australian Museum, one of the collectors of the holotype.

Habronestes hunti n.sp.

Figs. 65, 72, 73, 110, 115, 116, 141

Type material. HOLOTYPE ♂: NSW, East Kunderang Trail, 1.35 km E of West Kunderang Trail, 30°48'41"S 152°2'55"E, 4.ii–9.iv.1993, 890 m, G/C, AM KS83932. PARATYPES: same data as holotype: 1 ♀, 11 ♂, AM KS39157; 1 ♂ as previous, QM S60825; 15 ♂ ♂ Richmond Range SF, Mt Brown Rd, 0.1 km N from Y intersection, 28°37'56"S 152°43'18"E, 4.ii–9.iv.1993, 480 m, G/C, AM KS36026; 1 ♀, 25 ♂ ♂ 0.5 km from Wheatley Ck Rd on Camp Ck Rd, leasehold land, 28°47'0"S 152°19'29"E, 4.ii–9.iv.1993, 550 m, G/C, AM KS36268; 1 ♀, 9 ♂ ♂ 2.8 km from Wheatley Ck access Rd (on Camp Ck), leasehold land, 28°47'10"S 152°18'37"E, 4.ii–9.iv.1993, 435 m, G/C, AM KS36250; 5 ♂ ♂ 240 m E of jctn of Kunderang East & Kunderang West Rds, 30°48'53"S 152°2'9"E, 4.ii–9.iv.1993, 900 m, G/C, AM KS39160; 3 ♂ ♂ 3.45 km along Wheatley Ck Access Rd on Camp Ck Rd, 28°47'16"S 152°18'56"E, 4.ii–9.iv.1993, 470 m, G/C, AM KS36262; 1 ♂ Ballengarra SF, Cooperabung Range Rd, 1.1 km S of Narang Rd, 31°12'54"S 152°42'44"E, 4.ii–9.iv.1993, 200 m, G/C, AM KS39182; 7 ♂ ♂ Ballengarra SF, Cooperabung Range Rd, 4.5 km N of Narang Rd, 31°11'46"S 152°42'25"E, 4.ii–9.iv.1993, 90 m, G/C, AM KS39181; 1 ♂ Beaury SF Rocky Waterholes Rd, 28°33'12"S 152°19'45"E, 4.ii–9.iv.1993, 630 m, G/C, AM KS36096; 11 ♂ ♂ Boonoo SF, jctn Woolool Wooloolni and Basket Swamp Rd, 28°55'49"S 152°8'21"E, 4.ii–9.iv.1993, 1070 m, G/C, AM KS36340; 1 ♂ Boonoo SF, Timbarra Trig, 28°56'41"S 152°8'31"E, 4.ii–9.iv.1993, 1130 m, G/C, AM KS36346; 1 ♂ Boorook SF, 1 km NW Boorook Ck jctn, on Conlongan Rd, Midway between Boorook Ck and Gilgurry Ck on Conlongan Rd,

28°51'24"S 152°11'27"E, 4.ii-9.iv.1993, 980 m, G/C, AM KS36323; 1 ♀, 4 ♂ ♂ Boorook SF, 300 m NW of Gilgurry Mt, 28°47'23"S 152°10'56"E, 4.ii-9.iv.1993, 980 m, G/C, AM KS36315; 14 ♂ ♂ Boundary Ck SF, 1.9 km along Sheas Nob Rd from Boundary Ck Rd, 29°59'25"S 152°34'33"E, 4.ii-9.iv.1993, 550 m, G/C, AM KS39022; 2 ♀ ♀, 16 ♂ ♂ Boundary Ck SF, 100 m S of jctn of Dilli & Boundary Ck Rds, 29°58'14"S 152°36'51"E, 4.ii-9.iv.1993, 540 m, G/C, AM KS39012; 3 ♂ ♂ Bulga SF, 1.2 km up 4WD track N of Grey Gums Forest Rd 2.1 km from Douglas River Rd, 31°32'56"S 152°14'51"E, 4.ii-9.iv.1993, 620 m, G/C, AM KS39186; 1 ♀, 3 ♂ ♂ Bulga SF, Grey Gums Forest Rd 1.1 km from Doyles River Rd, 31°33'35"S 152°14'36"E, 4.ii-9.iv.1993, 620 m, G/C, AM KS39187; 3 ♀ ♀, 1 ♂ ♂ Bulga SF, Padmans Rd nr intersection of Pole Dump Rd, 31°36'58"S 152°10'39"E, 4.ii-9.iv.1993, 730 m, G/C, AM KS39190; 1 ♀ Bulls Ground SF nr Wauchope, 31°33'S 152°38'E, 10.ii.1991, dry euc. open forest, Plot 3B4-burnt, 6-13 Feb 1991, A. York, NSW Forestry, AM KS43349; 1 ♂ Bundjalung NP, hilltop on ridge between Big Marsh & Esk River, 29°17'35"S 153°16'40"E, 4.ii-9.iv.1993, 23 m, G/C, AM KS39016; 4 ♂ ♂ Bundjalung NP, nr new gravel quarry, 29°17'12"S 153°16'40"E, 4.ii-9.iv.1993, 20 m, G/C, AM KS39017; 1 ♀, 12 ♂ ♂ Chaelundi SF, 1.2 km W along Stockyard FT from Chandlers Ck, 29°56'48"S 152°31'46"E, 4.ii-9.iv.1993, 450 m, G/C, AM KS39015; 9 ♂ ♂ Chaelundi SF, 3.8 km W along Stockyard FT from Chandler Ck, 29°57'50"S 152°31'23"E, 4.ii-9.iv.1993, 450 m, G/C, AM KS39025; 1 ♀, 1 ♂ Conglomerate SF, alongside rd below dam, 0.55 km SW along Old Growth Rd, N side of rd, 30°6'55"S 153°4'55"E, 4.ii-9.iv.1993, 380 m, G/C, AM KS39020; 1 ♂, as previous, AM KS48712; 3 ♀ ♀, 20 ♂ ♂ Conglomerate SF, 1.7 km NW on Murphys Rd from Madmans Ck Bridge, on S side of ridge, 30°3'57"S 153°5'58"E, 4.ii-9.iv.1993, 220 m, G/C, AM KS39013; 8 ♂ ♂ Conglomerate SF, 100 m SW of jctn of Hallgraths Trail & Sherwood rd, 30°7'0"S 153°3'14"E, 4.ii-9.iv.1993, 320 m, G/C, AM KS39019; 2 ♀ ♀, 24 ♂ ♂ Conglomerate SF, 700 m N along Murphys Rd, from Tea Tree Rd, W side of rd, S of Madmans Ck, 30°4'52"S 153°6'24"E, 4.ii-9.iv.1993, 130 m, G/C, AM KS39023; 1 ♀ Dorrigo NP, off Dorrigo-Bellingen Rd, about 20 km from Bellingen (to E of rd) about 500 m S of Newell Falls, 30°23'55"S 152°44'56"E, 4.ii-9.iv.1993, 410 m, G/C, AM KS35631; 11 ♂ ♂ East Kunderang Trail, 2.1 km E of West Kunderang Trail, 30°49'0"S 152°3'25"E, 4.ii-9.iv.1993, 845 m, G/C, AM KS39161; 1 ♂ Enfield SF, Dodds Fire Trail, 1 km from Enfield Rd, 31°23'44"S 151°53'6"E, 4.ii-9.iv.1993, 1050 m, G/C, AM KS39159; 19 ♂ ♂ Enfield SF, Mummel Forest Rd, 7.6 km N of jctn with Enfield Forest Rd, 31°17'0"S 151°51'17"E, 4.ii-9.iv.1993, 1340 m, G/C, AM KS39158; 1 ♂ Euroka, Blue Mountains, 33°45'S 150°13'E, 8.iii.1965, A.E. Speechley, AM KS15596; 17 ♂ ♂ Gilgurry SF, Rivertree Fire Trail, on ridge 2 km NNE from t/o, 28°45'18"S 152°15'52"E, 4.ii-9.iv.1993, 770 m, G/C, AM KS36245; 2 ♀ ♀, 56 ♂ ♂ Headwaters of Wheatley Ck, leasehold Land, 28°45'7"S 152°19'44"E, 4.ii-9.iv.1993, 550 m, G/C, AM KS36265; 1 ♂ Kangaroo River SF, 200 m E of a point 550 m along Burns Rd, 30°4'36"S 152°52'5"E, 4.ii-9.iv.1993, 320 m, G/C, AM KS39021; 1 ♂ Kangaroo River SF, 700 m E of Arinya Rd on a logging track 900 m from Burns Rd jctn, 30°4'36"S 152°52'5"E, 4.ii-9.iv.1993, 360 m, G/C, AM KS39014; 3 ♂ ♂ Karuah SF, 0.1 km W along Hobart Forest Rd from Foleys Rd, 32°35'12"S 151°55'14"E, 4.ii-9.iv.1993, 10 m, G/C, AM KS39180; 15 ♂ ♂ Karuah SF, NE slope of Little Mountain, just W of Karuah Rd, 32°36'17"S 151°56'41"E, 4.ii-9.iv.1993, 40 m, G/C, AM KS39189; 2 ♂ ♂ Karuah SF, SE of jctn Little Mtn & Hobart Forest Rds, 32°35'45"S 151°56'15"E, 4.ii-9.iv.1993, 10 m, G/C, AM KS39188; 1 ♂ Kirrawee, 34°2'S 151°4'E, 26.iii.1967, AM KS15677; 1 ♀, 17 ♂ ♂ London Bridge SF, 3.7 km SW of London Bridge Lookout, end of FC survey rd, off London Bridge Rd overlooking gorge, 29°51'31"S 152°12'47"E, 4.ii-9.iv.1993, 960 m, G/C, AM KS36393; 2 ♂ ♂ McPherson Range, 28°22'S 152°50'E, 23.ii.1989, hoop pine, Mt Warning Caldera Survey, UNE, 300 m, Smith, Hines, Pugh & Webber, AM KS55703; 3 ♀ ♀, 30 ♂ ♂ Morgan Ck, 5.9 km NE from creek crossing, 28°46'31"S 152°18'45"E, 4.ii-9.iv.1993, 620 m, G/C, AM KS36256; 7 ♂ ♂ Morgans Ck, 4.5 km NE from creek crossing on Wheatley Ck Rd on Wheatley Ck access road, leasehold land, 28°46'37"S 152°18'19"E, 4.ii-9.iv.1993, 590 m, G/C, AM KS36259; 21 ♂ ♂ Nerang SF, 0.45 km E along Boundary Rd from Masonite Track, 32°32'16"S 152°7'40"E, 4.ii-9.iv.1993, 130 m, G/C, AM KS39185; 9 ♂ ♂ Nerang SF, 0.3 km S along Coxs Fence Trail from Boundary Rd, 31°38'19"S 152°9'30"E, 4.ii-9.iv.1993, 70 m, G/C, AM KS39184; 1 ♂ Oakwood SF, 0.3 km along Sydney Plain Hut Track from London Bridge Fire Trail, 29°55'25"S 152°5'58"E, 4.ii-9.iv.1993, 970 m, G/C, AM KS36383; 1 ♂ Oakwood SF, 0.65 km N along Oakwood FT from London Bridge Fire Trail, 29°53'45"S 152°5'41"E, 4.ii-9.iv.1993, 1060 m, G/C, AM KS36376; 2 ♂ ♂ Oakwood SF, 250 m upstream of London Bridge Fire Trail, House Ck, 29°54'23"S 152°5'25"E, 4.ii-9.iv.1993, 1000 m, G/C, AM KS36374; 1 ♂ Port Hacking, 34°4'S 151°7'E, 1.iii.1969, Mascord coll. no.490, N. Allen, AM KS15597; 21 ♂ ♂ Ramornie SF, Main Ck, track

off Mt Tindal Rd, 29°43'1"S 152°38'24"E, 4.ii-9.iv.1993, 110 m, G/C, AM KS39480; 1 ♀, 31 ♂ ♂ Ramornie SF, Mt Tindal Rd, 29°42'12"S 152°35'26"E, 4.ii-9.iv.1993, 380 m, G/C, AM KS39483; 1 ♀, 11 ♂ ♂ Ramornie SF, Mt Tindal Rd, 29°41'49"S 152°35'0"E, 4.ii-9.iv.1993, 490 m, G/C, AM KS39484; 1 ♀, 25 ♂ ♂ Ramornie SF, track off Mt Tindal Rd, 29°42'41"S 152°37'36"E, 4.ii-9.iv.1993, 220 m, G/C, AM KS39481; 10 ♂ ♂ Ramornie SF, track off Mt Tindal Rd, headwaters of Valorem Ck, 29°42'18"S 152°35'52"E, 4.ii-9.iv.1993, 380 m, G/C, AM KS39482; 30 ♂ ♂ Ramornie SF, track off T-Ridge Rd, 29°43'0"S 152°33'23"E, 4.ii-9.iv.1993, 150 m, G/C, AM KS39479; 1 ♀, 5 ♂ ♂ Ramornie SF, T-Ridge Rd, 29°43'23"S 152°34'11"E, 4.ii-9.iv.1993, 420 m, G/C, AM KS39477; 1 ♀, 21 ♂ ♂ Ramornie SF, T-Ridge Rd, 29°43'13"S 152°33'38"E, 4.ii-9.iv.1993, 300 m, G/C, AM KS39478; 31 ♂ ♂ Richmond Range SF, jctn of Wattle Ck Rd and Wattle Ck, 28°38'9"S 152°46'40"E, 4.ii-9.iv.1993, 130 m, G/C, AM KS36045; 20 ♂ ♂ Richmond Range SF, Oaky Ck Rd, 28°38'39"S 152°45'45"E, 4.ii-9.iv.1993, 230 m, G/C, AM KS36050; 1 ♂, as previous, AM KS36052; 27 ♂ ♂ Richmond Range SF, Wattle Ck Rd, 28°38'42"S 152°46'29"E, 4.ii-9.iv.1993, 220 m, G/C, AM KS36060; 5 ♂ ♂ Ridge between Camp Ck and Stydgy Ck, leasehold Land, 28°46'18"S 152°18'8"E, 4.ii-9.iv.1993, 640 m, G/C, AM KS36242; 1 ♂ St Georges Basin, 35°5'S 150°35'E, i.1984, I. Buddle, AM KS22639; 1 ♂ Styx River SF off Cunnawarra Trail, about 2 km N Cunnawarra Ck, 30°32'49"S 152°20'16"E, 4.ii-9.iv.1993, 1070 m, G/C, AM KS35627; 1 ♂ Tweed Range, 28°25'S 153°1'E, 16.ii.1989, wet sclerophyll, Mt Warning Caldera Survey, UNE, 400 m, Smith, Hines, Pugh & Webber, AM KS55699; 2 ♀ ♀, 25 ♂ ♂ Wallaroo SF, Flaggy Ck, 0.95 km S along Ripleys Trail from Clarence Town Rd, 32°36'3"S 151°48'7"E, 4.ii-9.iv.1993, 20 m, G/C, AM KS39183; 10 ♂ ♂ Wallaroo SF, Gilmore Lookout, 32°37'27"S 151°47'16"E, 4.ii-9.iv.1993, 210 m, G/C, AM KS39191; 2 ♂ ♂ Washpool NP, North West Fire Trail, 29°27'36"S 152°17'25"E, 4.ii-9.iv.1993, 950 m, G/C, AM KS36405; 3 ♂ ♂ Washpool NP, North West Fire Trail, 29°27'30"S 152°16'52"E, 4.ii-9.iv.1993, 950 m, G/C, AM KS36418; 1 ♂, as previous, AM KS56168; 2 ♂ ♂ Washpool NP, Washpool Forest Way, 29°24'47"S 152°17'0"E, 4.ii-9.iv.1993, 860 m, G/C, AM KS36295; 1 ♂ Bendoura SF, 700 m E of Wallace's Gap, 35°34'37"S 149°41'16"E, 16.ii.1999, J. Tarnawski & S. Lassau, AM KS55856; 1 ♂ Dampier SF, Ross Rixon Rd, 36°2'56"S 149°57'21"E, 11.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55854; 1 ♂ Dampier SF, Ross Rixon Rd, 36°2'56"S 149°57'36"E, 11.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55857; 1 ♂ Nerrigundah Mt Rd, Dampier SF, 36°7'58"S 149°56'2"E, 10.iii.1999, J. Tarnawski & S. Lassau, AM KS55855; 1 ♀ Rocky Waterholes Rd, Beauray SF, 28°32'S 152°20'E, 9.iv.1993, 4.ii-9.iv.1993, 705 m, G/C, AM KS56166; 1 ♂ Tobacco Pinch Rd, Bodalla SF, 36°10'55"S 150°2'56"E, 10.iii.1999, J. Tarnawski & S. Lassau, AM KS55856; 1 ♂ Tuross River Rd, Bodalla SF, 36°11'13"S 149°56'13"E, 10.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55858; 1 ♂ 7.5 km S of Nelligen, Mogo SF, 35°43'19"S 150°6'50"E, 8.iii.1999, J. Tarnawski & S. Lassau, AM KS55861; 1 ♂ Brou Lake Rd, Narooma, Site 3, 36°7'15"S 150°2'49"E, 9.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55852; 1 ♂ Highway 54, 32 km NW of Batemans Bay, 35°33'7"S 149°59'38"E, 16.iii.1999, J. Tarnawski & S. Lassau, AM KS55870; 1 ♂ jctn of Skid Ridge & North Head Rds, Murramarang NP, 35°41'9"S 150°16'4"E, 17.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55862; 1 ♂ Orange Ridge Rd, Bodalla SF, 36°16'55"S 149°53'31"E, 12.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55863; 1 ♂ Tuross River Rd, Bodalla SF, 36°10'51"S 149°56'41"E, 10.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55859; 1 ♂ Tuross River Rd, Bodalla SF, 36°11'16"S 149°56'16"E, 10.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55871; 1 ♂ Turtle Creek Fire Trail, Monga SF, 35°38'20"S 149°55'55"E, 15.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55860.

Diagnosis. Eyes equal sized. Abdomen with 3 pairs of large white patches on anterior part and 3 patches in front of spinnerets. Tibiae and metatarsi I, II with irregular band of short spines ventrally in males. Extremely small DTiA, LTA with transverse plate.

Description. *Male* (holotype). Total length 7.56; carapace 3.72 long, 2.84 wide; 0.88 high; cl/cw 1.31; sternum 1.80 long, 1.56 wide; sl/sw 1.15. Abdomen 3.84 long, 2.48 wide. **Colour.** Carapace, sternum, chelicerae sepia brown; maxillae, labium sepia brown, distally white. Abdomen sepia brown with 3 pairs of white patches on anterior part and 3 patches in front of spinnerets; laterally with 2 long white patches equal in length; ventrally with 1 longitudinal white stripe from epigastric fold to near tracheal spiracle

and 1 pair of white patches near tracheal spiracle. Legs yellow; clearly annulated; legs I–IV with white coxa, sepia brown trochanter, proximal $\frac{1}{3}$ – $\frac{1}{2}$ of femora white and distal part sepia brown. *Eyes*. In 2 rows each with 4 eyes, both rows procurved. Nearly equal sized. Eye group width 0.51 of headwidth; AME 0.18; ALE 0.16; PME 0.18; PLE 0.18; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.12; PME–PLE 0.16. MOQ: AME–PME 0.52; AME–AME 0.40; PME–PME 0.48. *Clypeus & chilum*. Clypeus 0.88 high; chilum divided. *Legs*. Length formula 4123; tibiae and metatarsi I, II with a band of short spines ventrally. *Male palp* (Figs. 72, 73, 110). RCF deep, almost running the entire cymbium length. LTA with a long vertical stalk, and T-shaped plate; DTA with a thin stalk; VTA with sharp tip. Tibiae short; DTiA short; VTiA (Fig. 73).

Female (paratype AM KS39013). Total length 10.1; carapace 4.29 long, 2.94 wide; 1.55 high; cl/cw 1.46; sternum 1.88 long, 1.76 wide; sl/sw 1.07. Abdomen 5.83 long, 3.50 wide. *Colour*. Same as male. *Eyes*. Eye group width 0.5 of headwidth; AME 0.19; ALE 0.20; PME 0.22; PLE 0.22; AME–AME 0.04; AME–ALE 0.06; ALE–PLE 0.08; PME–PME 0.16; PME–PLE 0.20. MOQ: AME–PME 0.58; AME–AME 0.42; PME–PME 0.60. Clypeus 1.02 high. *Legs*. Same as male, but without irregular band of short ventral spines on tibiae and metatarsi I, II. *Epigyne* (Figs. 115, 116). With small paired halfmoon-shaped copulatory openings laterally. Vulva with very large atrium-like copulatory ducts ending in almost touching spermathecae.

Distribution. Widespread in eastern New South Wales (Fig. 141).

Etymology. Species name is a patronym in honour of Dr Glenn Hunt of the Australian Museum, an experienced arachnologist, whose recent death was a great loss to Australian arachnology.

Habronestes jocquei n.sp.

Figs. 56, 68, 69, 101, 111, 112, 141

Type material. HOLOTYPE ♂: NSW, between Condobolin & Euabalong, 33°6'S 146°50'E, iii.1972, under rock near edge of road, M.R. & G.E. Gray, AM KS83928. PARATYPES same data as holotype: 1 ♀, AM KS15656; 1 ♂ QM S60824.

Diagnosis. Eyes in circular group around AME, AME smallest, other eyes subequal. Abdomen with 2 pairs of white patches on anterior part and 2 patches in front of spinnerets. Tibia and metatarsus I with a band of conical, thorn-like spines ventrally; palpal tibia and cymbium with thick, thorn-like spines retrolaterally in males. Tibia III with a row of 4 stout dorsal spines at distal end, tibia IV with a row of 3 stout dorsal spines at distal end in females. Epigyne with large, paired halfmoon-shaped openings.

Description. *Male* (holotype). Total length 5.32; carapace 2.80 long, 2.00 wide; 0.76 high; cl/cw 1.40; sternum 1.24 long, 1.12 wide. Abdomen 2.52 long, 1.80 wide. *Colour*. Carapace chestnut brown, iridescent; sternum yellow brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 pairs of white patches on anterior part and 2 patches in front of spinnerets; laterally with 2 long white patches equal in

length; ventrally medium brown. Legs yellow brown with sepia brown femora and pale tibiae in proximal half, colour pattern indistinct. *Eyes*. In circular group around AME. AME smallest, other eyes about equal-sized. Eye group width 0.52 of headwidth; AME 0.10; ALE 0.14; PME 0.12; PLE 0.13; AME–AME 0.04; AME–ALE 0.02; ALE–PLE 0.03; PME–PME 0.06; PME–PLE 0.10. MOQ: AME–PME 0.44; AME–AME 0.24; PME–PME 0.30. *Clypeus & chilum*. Clypeus 0.52 high; chilum undivided, long. *Legs*. Length formula 4123; tibia I with a band of conical, thorn-like spines ventrally; metatarsus I with 2 rows of thick, thorn-like spines ventrally. *Male palp* (Figs. 68, 69, 101). RCF deep, $\frac{2}{3}$ of the cymbium length; cymbium with thick, thorn-like spines retrolaterally. LTA with a short vertical stalk and irregular plate; DTA with a thin stalk; VTA long, rounded at tip; tibia globose; with thick, thorn-like spines retrolaterally; DTiA triangular; VTiA (Fig. 69).

Female (paratype AM KS15656). Total length 6.80; carapace 3.10 long, 1.90 wide; 1.60 high; cl/cw 1.63; sternum 1.30 long, 1.16 wide. Abdomen 3.00 long, 1.88 wide. *Colour*. Same as male. *Eyes*. Eye group width 0.53 of headwidth; AME 0.10; ALE 0.16; PME 0.12; PLE 0.14; AME–AME 0.06; AME–ALE 0.03; ALE–PLE 0.04; PME–PME 0.08; PME–PLE 0.16. MOQ: AME–PME 0.44; AME–AME 0.28; PME–PME 0.34. Clypeus 0.56 high. *Abdomen*. Oval; with stout bristles in front of tracheal spiracle. *Legs*. Tibia III with a row of 4 stout, dorsal spines at distal end; tibia IV with a row of 3 stout, dorsal spines at distal end. *Epigyne* (Figs. 111, 112). With large, paired, halfmoon-shaped openings. Vulva with s-shaped copulatory ducts ending in small separated spermathecae.

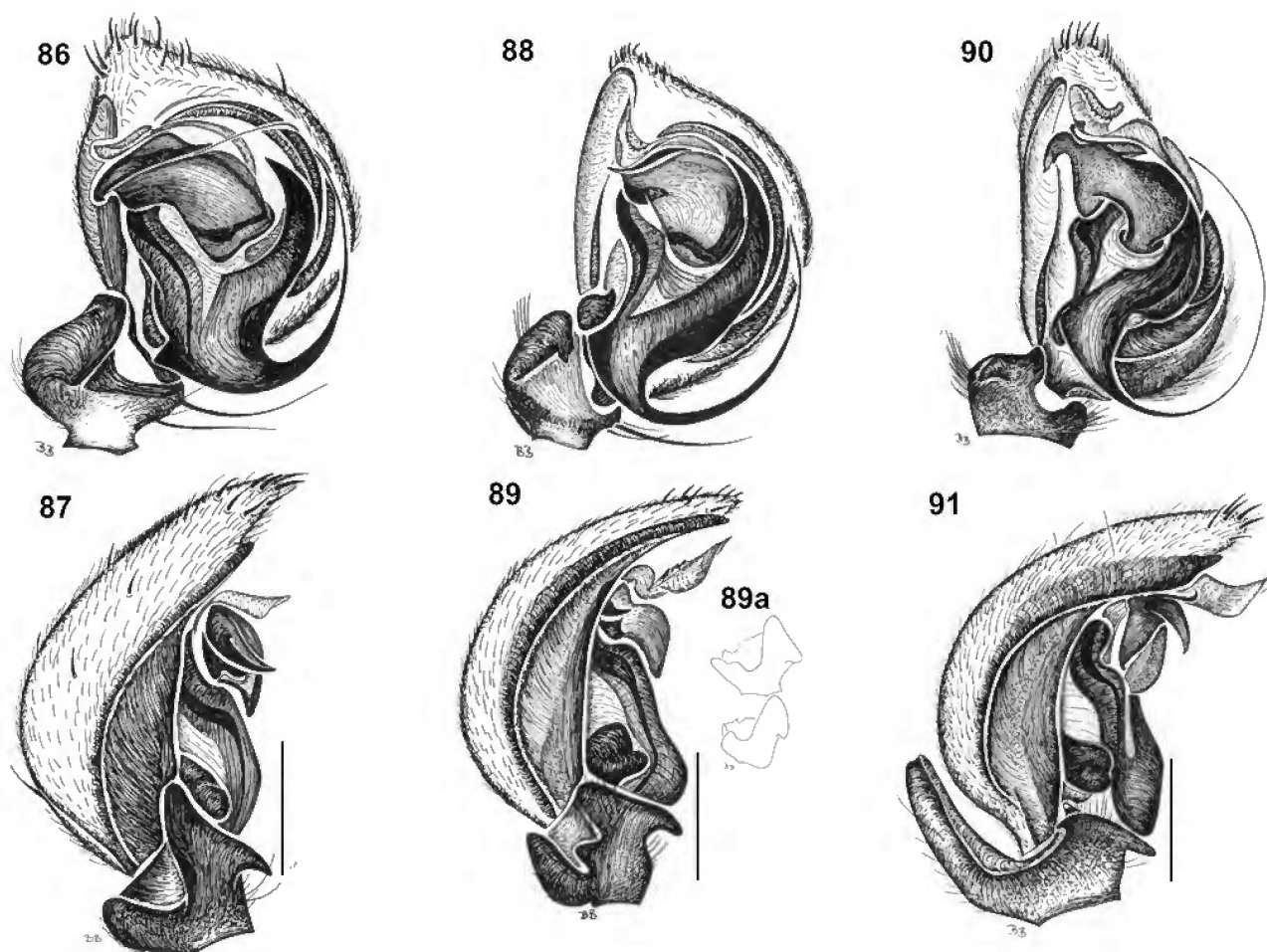
Distribution. Known only from the type locality in western New South Wales (Fig. 141).

Etymology. Species name is a patronym in honour of Dr Rudy Jocqué of the African Museum in Tervuren, a world expert in Zodariidae.

Habronestes longiconductor n.sp.

Figs. 61, 94, 95, 107, 136, 137, 141

Type material. HOLOTYPE ♂: NSW, Corringle SF, 33°22'12"S 147°15'0"E, 25.iii.1996, Callitris forest F5 trap B3, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49596. PARATYPES: 6 ♂ 20 km N of Burcher on rd to Manna Mtn, 33°22'12"S 147°15'2"E, 25.iii.1996, roadside corridor vegetation N5 Trap B1, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49550; 18 ♂ Gubatta, 33°32'0"S 146°31'28"E, 24–28.ii.1999, DD, QM S50823; 1 ♀, 5 ♂ as previous, QM S50834; 1 ♂ Gubatta, 33°38'10"S 146°33'8"E, 24–28.ii.1999, DD, QM S50876; 9 ♂ Gubatta, 33°32'3"S 146°31'56"E, 24–28.ii.1999, DD, QM S50930; 12 ♂ as previous, QM S50943; 1 ♀, 22 ♂ Gubatta, 33°34'33"S 146°34'36"E, 24–28.ii.1999, DD, QM S50937; 2 ♀ ♀, 37 ♂ as previous, QM S51016; 4 ♂ Gubatta, 33°38'7"S 146°33'12"E, 24–28.ii.1999, DD, QM S50953; 2 ♂ as previous, QM S52134; 8 ♂ Pulletop, 34°0'6"S 146°5'10"E, 24–28.ii.1999, DD, QM S50993; 1 ♀, 15 ♂ as previous, QM S51517; 1 ♀, 12 ♂ Pulletop, 34°0'59"S 146°4'15"E, 24–28.ii.1999, DD, QM S51521; 19 ♂ as previous, QM S51573; 2 ♂ Pulletop, 33°58'55"S 146°4'46"E, 24–28.ii.1999, DD, QM S51588; 8 ♂ as previous, QM S51605; 1 ♂ Round Hill, near Euabalong, 32°58'S 146°9'E, 4.v.1972, M.R. Gray, AM KS50263; 1 ♂ iii.1968, in Mallee leaf litter, AM KS15701; 1 ♂ Taleeban Woodland, 33°56'29"S 146°25'8"E, 23–27.ii.1999, DD, QM S39854; 1 ♂ as previous, QM S50914; 1 ♀, 12 ♂ Taleeban Woodland, 33°55'33"S 146°28'23"E, 23–27.ii.1999, DD, QM S50830; 7 ♂ as previous, QM S51597; 1 ♂ Taleeban Woodland, 33°57'42"S 146°26'52"E, 23–27.ii.1999, DD, QM S50843; 2 ♂ as previous, QM S50867; 2 ♂ Taleeban Woodland, 33°55'16"S 146°27'19"E, 23–27.ii.1999, DD, QM S50846; 18 ♂ as previous, QM S51627.



Figs. 86–91. *Habronestes pictus* species-group male palps, ventral view (above), lateral view (below): (86, 87) *Habronestes helenae* n.sp.; (88, 89) *Habronestes grahami* n.sp.; (90, 91) *Habronestes grayi* n.sp. Scales 0.5 mm.

Diagnosis. Eyes in 2 rows, both rows procurved, AME smallest, other eyes subequal. Abdomen with 2 pairs of large white patches and 3 patches in front of spinnerets. Palpal cymbium large and extremely bent, RCF reaches over tip; similar to *H. giganteus* but differs by shape of LTA and extremely long DTA. Epigyne with small, paired, half moon shaped openings and a medial lanceolate hook.

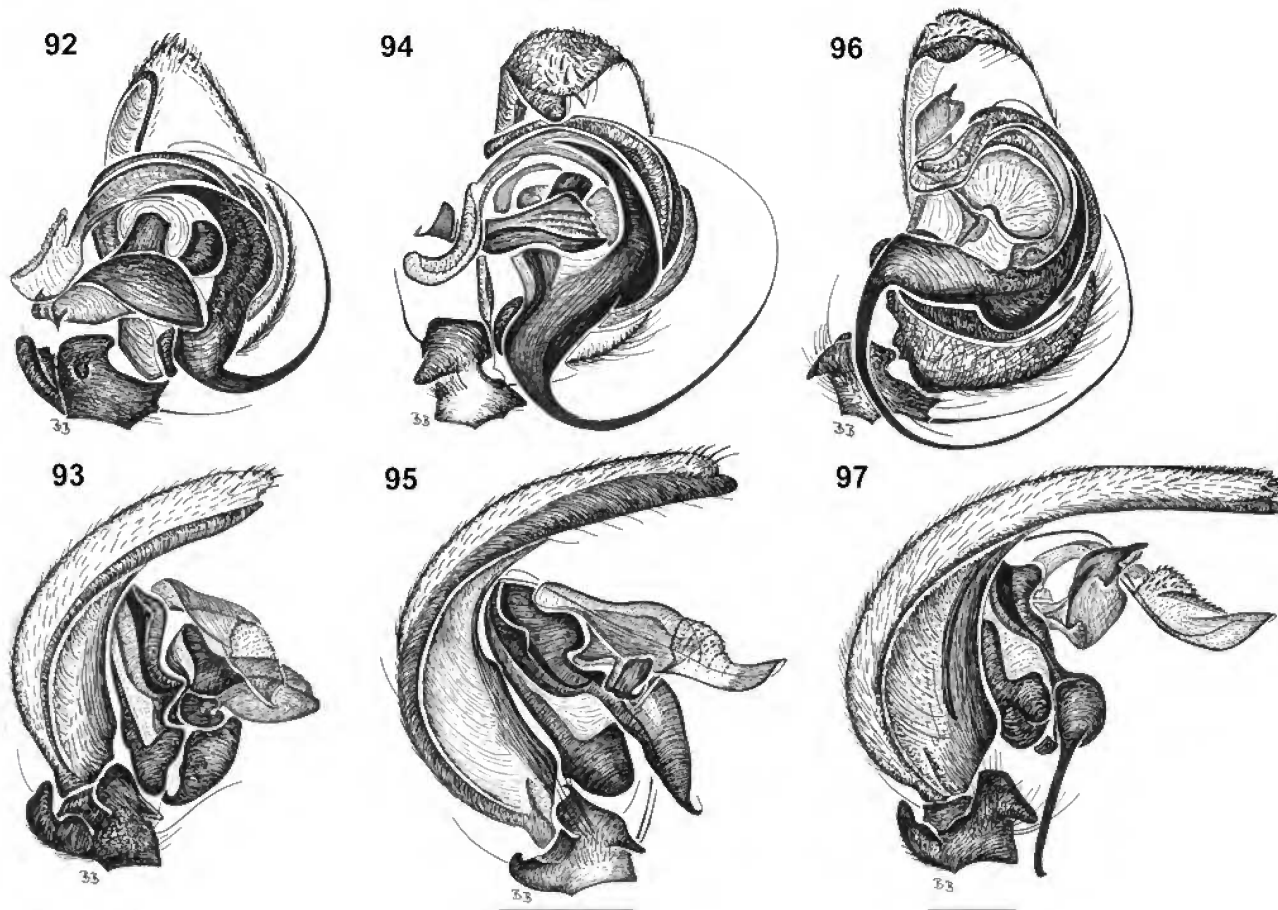
Description. *Male* (holotype). Total length 5.16; carapace 2.80 long, 2.16 wide; 1.16 high; cl/cw 1.30; sternum 1.36 long, 1.16 wide; sl/sw 1.17. Abdomen 2.36 long, 1.72 wide. *Colour.* Carapace sepia brown, iridescent; sternum yellow brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 large pairs of white patches and 3 patches in front of spinnerets; laterally with 2 long white patches equal in length; ventrally pink brown. Legs yellow brown; clearly annulated; legs I–IV with white coxa, prolateral suture sepia brown, sepia brown trochanter, proximal margin of femora sepia brown, proximal ½ white and distal ½ sepia brown, u-shaped pattern, sepia-brown lateral stripes on patella, tibiae and metatarsi. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME smallest, other eyes equal. Eye group width 0.53 of headwidth; AME 0.12; ALE 0.14; PME 0.16; PLE 0.16; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.06; PME–PLE 0.06. MOQ: AME–PME 0.38; AME–AME 0.28; PME–PME 0.38. *Clypeus & chilum.*

Clypeus 0.6 high; chilum divided. *Legs.* Length formula 4123; femora I, II with 1 row, III, IV with 2 rows of long, thin setae ventrally. *Male palp* (Figs. 94, 95, 107). RCF deep, reaches over tip of cymbium; from lateral view cymbium extremely bent, with weak dorsal scopula and a few strong spines apically. LTA with a long vertical stalk and irregular horizontal plate; DTA a flattened stalk; VTA long, with sharp tip. Tibiae short with 2 long prolateral setae; DTiA as long as ventrolateral one, hooked; VTiA (Fig. 95).

Female (paratype QM S51517). Total length 6.16; carapace 3 long, 2.04 wide; 1.12 high; cl/cw 1.47; sternum 1.48 long, 1.28 wide; sl/sw 1.16. Abdomen 3.16 long, 2.16 wide. *Colour.* Same as male. *Eyes.* Eye group width 0.5 of headwidth; AME 0.12; ALE 0.16; PME 0.16; PLE 0.16; AME–AME 0.06; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.06; PME–PLE 0.06. MOQ: AME–PME 0.40; AME–AME 0.30; PME–PME 0.38. Clypeus 0.6 high. *Legs.* Same as male. *Epigyne* (Figs. 139, 140). With small, paired, halfmoon-shaped openings and a medial, lanceolate hook. Vulva with long, spiralled copulatory ducts ending in small almost touching spermathecae.

Distribution. New South Wales (Fig. 141).

Etymology. Species name is chosen because of the extremely long DTA which functions as a conductor.



Figs. 92–97. *Habronestes pictus* species-group male palps, ventral view (above), lateral view (below): (92, 93) *Habronestes pictus* (Koch); (94, 95) *Habronestes longiconductor* n.sp.; (96, 97) *Habronestes giganteus* n.sp. Scales 0.5 mm.

Habronestes minor n.sp.

Figs. 62, 84, 85, 103, 127, 128, 141

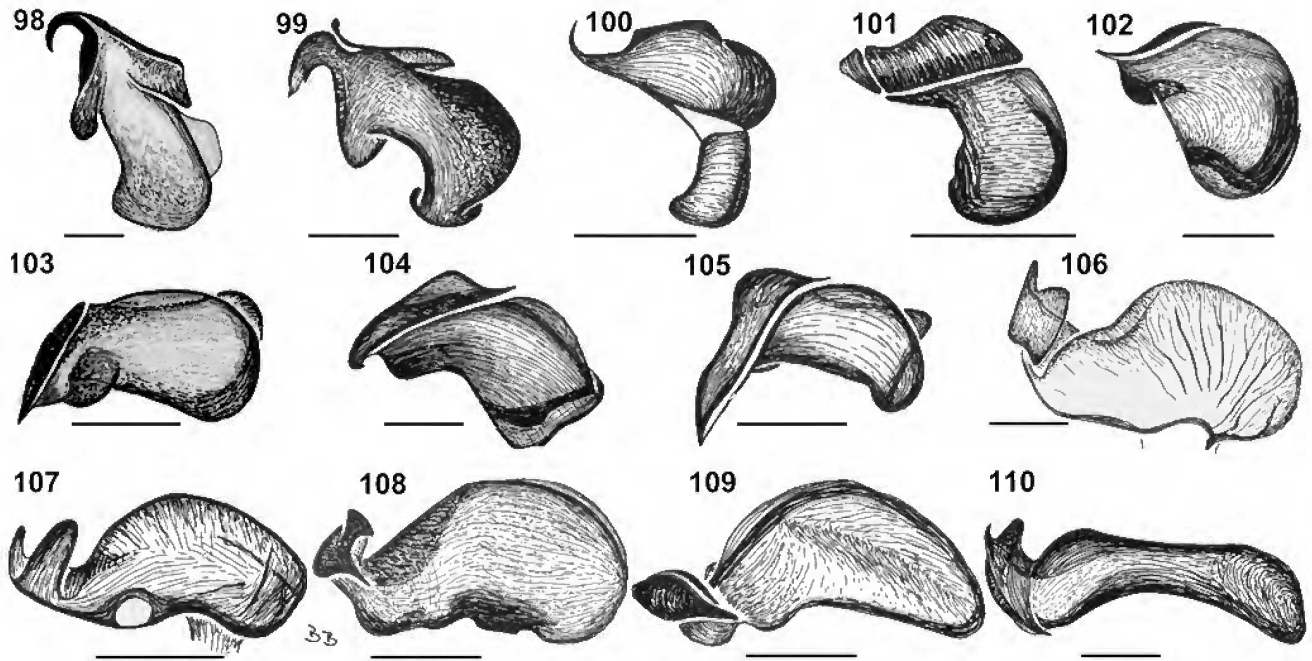
Type material. HOLOTYPE ♂: NSW, Booti Booti NP, 32°16'15"S 152°31'42"E, 9.x.1997, L. Wilkie, AM KS55916. PARATYPES: NSW: 1 ♂ Booti Booti NP, 32°16'15"S 152°31'42"E, 13.xii.1996, L. Wilkie, AM KS56175; 2 ♂ ♂ as previous, AM KS56098 and AM KS56099; 1 ♀ as previous, 13.xii.1996, AM KS56100; 3 ♂ ♂ as previous in AM: KS56101, KS56102, KS56103; 1 ♂ as previous, 9.x.1997, AM KS56097; 1 ♂ Booti Booti NP, 32°16'47"S 152°31'28"E, 13.xi.1996, L. Wilkie, AM KS56092; 4 in AM as previous: 1 ♀ KS56093, 1 ♂ KS56095, 2 ♀ coll. 13.xii.1996, KS56094 and KS56096; 2 ♂ ♂ in AM, 700 m E of Wallaces Gap, Bendoura SF, 35°34'37"S 149°41'16"E, 16.iii.1999, J. Tarnawski & S. Lassau, KS55875 and KS55873; 1 ♂ North Head Rd, Murramarang NP, 35°42'25"S 150°16'30"E, 17.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55874.

Diagnosis. Eyes in 2 rows, both rows procurved, AME smallest, other eyes subequal. One of the 3 smallest species, with 2 pairs of white patches on anterior part of abdomen and 1 or 2 patches in front of spinnerets, differs from *H. piccolo* and *H. wilkiei* by shape of tibial apophysis, cymbium extremely bent, RCF nearly reaches tip.

Description. *Male* (holotype). Total length 3.28; carapace 1.68 long, 1.28 wide; 0.64 high; cl/cw 1.31; sternum 0.80 long, 0.76 wide; sl/sw 1.05. Abdomen 2.08 long, 1.52 wide. *Colour.* Carapace, sternum sepia brown, iridescent; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 pairs of white patches on anterior part and 1 or 2 patches in front of spinnerets; laterally with 2 stripes equal in length; ventrally

pink brown. Legs pale brown; clearly annulated; legs I–IV white coxa, medium brown trochanter, proximal margin of femora sepia brown, proximal ½ white and distal ½ sepia brown, darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME smallest, other eyes equal. Eye group width 0.57 of headwidth; AME 0.07; ALE 0.08; PME 0.08; PLE 0.08; AME–AME 0.02; AME–ALE 0.02; ALE–PLE 0.02; PME–PME 0.04; PME–PLE 0.06. MOQ: AME–PME 0.24; AME–AME 0.16; PME–PME 0.20. *Clypeus & chilum.* Clypeus 0.28 high; chilum undivided, short. *Legs.* Length formula 4123; femora I, II with 1 row, III, IV with 2 rows of long thin setae ventrally. *Male palp* (Figs. 84, 85, 103). RCF deep, reaching tip of cymbium. LTA with a thick short vertical stalk and irregular horizontal plate, birdhead shape retrolaterally; DTA, with long, thin stalk; VTA long, with sharp tip. Tibiae short, a small hook between; DTiA with sharp tip, as long as tibia; VTiA (Fig. 85).

Female (paratype AM KS56094). Total length 3.76; carapace 1.68 long, 1.04 wide; 0.76 high; cl/cw 1.61; sternum 0.72 long, 0.68 wide; sl/sw 1.05. Abdomen 1.60 long, 1.08 wide. *Colour.* Same as male. *Eyes.* Eye group width 0.57 of headwidth; AME 0.08; ALE 0.10; PME 0.10; PLE 0.10; AME–AME 0.02; AME–ALE 0.02; ALE–PLE 0.02; PME–PME 0.04; PME–PLE 0.06. MOQ: AME–PME 0.22; AME–AME 0.18; PME–PME 0.24. Clypeus 0.36 high. *Epigyne* (Figs. 125, 126). With triangular scape. Vulva with long, spiralled copulatory ducts ending in large spermathecae.



Figs. 98–110. *Habronestes pictus* species-group male palps, LTA ventral view: (98) *Habronestes bradleyi* (Pickard-Cambridge); (99) *Habronestes grayi* n.sp.; (100) *Habronestes piccolo* n.sp.; (101) *Habronestes jocquei* n.sp.; (102) *Habronestes grahami* n.sp.; (103) *Habronestes minor* n.sp.; (104) *Habronestes helenae* n.sp.; (105) *Habronestes wilkiei* n.sp.; (106) *Habronestes giganteus* n.sp.; (107) *Habronestes longiconductor* n.sp.; (108) *Habronestes pictus* (Koch); (109) *Habronestes raveni* n.sp.; (110) *Habronestes huntii* n.sp. Scales 0.25 mm.

Distribution. Coastal New South Wales (Fig. 141).

Etymology. Species name refers to the small size of the species (Latin, *minor* = small).

***Habronestes monocornis* n.sp.**

Figs. 54, 76, 77, 117, 118, 142

Type material. HOLOTYPE ♂: NSW, Gubatta, 33°38'7"S 146°33'12"E, 24.ii.1999, DD, QM S50906. PARATYPES: 5♂♂ same data as holotype in QM: S50906, S51518; 2♂♂ Gubatta, 33°38'10"S 146°33'8"E, 24–28.ii.1999, DD, QM S51555, S52135; 10♀, 23♂♂ Pulletop, 33°58'46"S 146°3'28"E, 24–28.ii.1999, DD, QM S39855, S41546, S50992, S51504, S51590, S51603, S51604; 1♀, 1♂ as previous, AM KS83926; 1♀, 21♂♂ Taleeban Woodland, 33°55'33"S 146°28'23"E, 23–27.ii.1999, DD, QM S39853, S51008, S51625.

Diagnosis. Eyes in circular group around AME; AME smallest, other eyes subequal. Abdomen with 2 pairs of white patches on anterior part and 3 patches in front of spinnerets. DTiA large, but basally not longer than tibia. LTA with 1 horn retrolaterally. Epigyne with large, paired, half moon shaped plates, not touching medially.

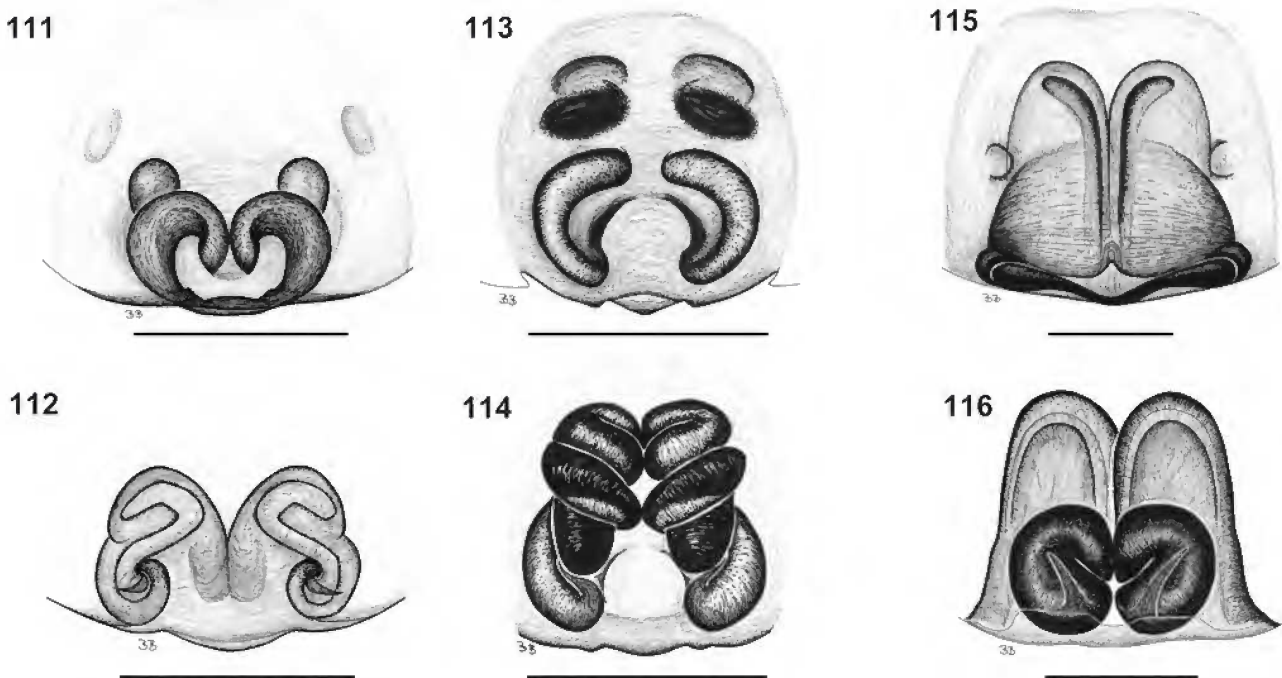
Description. *Male* (holotype). Total length 4.60; carapace 2.36 long, 1.84 wide; 1.00 high; cl/cw 1.28; sternum 1.20 long, 0.96 wide; sl/sw 1.25. Abdomen 2.24 long, 1.56 wide. *Colour.* Carapace, sternum sepia brown, iridescent; chelicerae medium brown; maxillae and labium medium brown, distally white. Abdomen sepia brown with 2 pairs of white patches and 3 patches in front of spinnerets; laterally with 3 long and broad white patches. Legs medium brown; clearly annulated; legs I–IV with white coxa, distally sepia brown, sepia brown trochanter, proximal about ½

white and distal ½ sepia brown femur, darker brown lateral stripes on patella and tibia; femur I proximal margin sepia brown with u-shaped pattern. *Eyes.* In circular group around AME. AME smallest, other eyes subequal. Eye group width 0.65 of headwidth; AME 0.08; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.04; AME–ALE 0.10; ALE–PLE 0.08; PME–PME 0.08; PME–PLE 0.08. MOQ: AME–PME 0.42; AME–AME 0.20; PME–PME 0.44. *Clypeus & chilum.* Clypeus 0.44 high; chilum undivided, long. *Legs.* Length formula 4123; femora I, II with 1 row, III, IV with 2 rows of long thin setae ventrally. *Male palp* (Figs. 76, 77). RCF deep, ⅔ of the cymbium length. LTA with a thick, short vertical stalk and an irregular, horizontal plate with 1 horn retrolaterally; DTA with a thin stalk; VTA, broad with sharp tip. Tibiae short; DTiA large, but basally not longer than tibia; VTiA (Fig. 77).

Female (paratype QM S51590). Total length 5.12; carapace 2.28 long, 1.64 wide; 0.76 high; cl/cw 1.39; sternum 1.16 long, 1.00 wide; sl/sw 1.16. Abdomen 2.84 long, 1.96 wide. *Colour.* Same as male. *Eyes.* Eye group width 0.70 of headwidth; AME 0.08; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.06; AME–ALE 0.10; ALE–PLE 0.10; PME–PME 0.08; PME–PLE 0.10. MOQ: AME–PME 0.44; AME–AME 0.22; PME–PME 0.44. *Epigyne* (Figs. 117, 118). With paired, half moon shaped plates. Vulva with long, spiralled copulatory ducts ending in almost touching spermathecae.

Distribution. Western New South Wales (Fig. 142).

Etymology. The choice of species name is a reference to the single horn on the retrolateral part of the LTA in the male palp.



Figs. 111–116. *Habronestes pictus* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (111, 112) *Habronestes jocquei* n.sp.; (113, 114) *Habronestes bradleyi* (Pickard-Cambridge); (115, 116) *Habronestes hunti* n.sp. Scales 0.5 mm.

***Habronestes piccolo* n.sp.**

Figs. 66, 80, 81, 100, 121, 122, 143

Type material. HOLOTYPE ♂: NSW, Barrington SF, Tugalow Ck, Barrington Trail, E side of trail, 31°54'41"S 151°26'39"E, 4.ii–9.iv.1993, 1370 m, G/C, AM KS39146. PARATYPES: 1 ♀, 2 ♂♂, same data as holotype, AM KS39146; 1 ♂ Barrington Tops SF, W of jctn of Thunderbolts Track & Devil's Hole track, 31°54'56"S 151°28'37"E, 4.ii–9.iv.1993, 1420 m, G/C, AM KS39144.

Diagnosis. Eyes in 2 rows, both rows procurved, PME and PLE largest. Most tiny of 3 smallest species with 2 pairs of white patches on anterior part of abdomen and 1 or 2 patches in front of spinnerets, differs from *H. wilkiei* and *H. minor* by shape of dorsal and retrolateral tegular apophysis and epigyne with lanceolate median scape.

Description. *Male* (holotype). Total length 2.62; carapace 1.36 long, 1.00 wide; 0.56 high; cl/cw 1.36; sternum 0.74 long, 0.68 wide; sl/sw 1.09. Abdomen 1.26 long, 0.96 wide. *Colour.* Carapace, sternum sepia brown; chelicerae medium brown; maxillae pale brown, at margin mottled with darker brown; labium pale brown, base darker brown. Abdomen sepia brown with 2 pairs of white patches and 3 patches in front of spinnerets; laterally with 2 equally long white stripes. Legs yellow brown; clearly annulated; legs I–IV with white coxa, prolateral suture sepia brown, sepia brown trochanter, proximal 1/3 of femora white and distal 2/3 sepia brown, darker brown lateral stripes on patella and tibia; femur IV proximal 1/2 white distal 1/2 sepia brown. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. PME, PLE largest. Eye group width 0.50 of headwidth; AME 0.06; ALE 0.06; PME 0.09; PLE 0.09; AME–AME 0.04; ALE–PLE 0.02; PME–PME 0.04; PME–PLE 0.06. MOQ: AME–PME 0.24; AME–AME 0.16; PME–PME 0.22. *Clypeus & Chilum.* Clypeus 0.28 high; chilum undivided, long. *Legs.* Length formula 4132; metatarsi I, II with 1 row; III, IV with

2 rows of short modified ventral spines. *Male palp* (Figs. 80, 81, 100). RCF deep, 2/3 of the cymbium length. LTA with a long, broad, horizontal stalk, and semicircular plate with long, sharp tip retrolaterally; DTA with short, thin stalk; VTA long with rounded tip. Tibiae short; DTiA with a sharp, dorsally elongate, tip; VTiA (Fig. 81).

Female (paratype AM KS39146). Total length 3.32; carapace 1.48 long, 1.00 wide; 0.68 high; cl/cw 1.48; sternum 0.62 long, 0.74 wide; sl/sw 0.84. Abdomen 1.84 long, 1.28 wide. *Colour.* Same as male. *Eyes.* Eye group width 0.50 of headwidth; AME 0.06; ALE 0.06; PME 0.09; PLE 0.09; AME–AME 0.04; ALE–PLE 0.02; PME–PME 0.04; PME–PLE 0.06. MOQ: AME–PME 0.24; AME–AME 0.16; PME–PME 0.22. Clypeus 0.38 high. *Epigyne* (Figs. 121, 122). With lanceolate median scape. Vulva with oval copulatory ducts ending in small globular spermathecae.

Distribution. Northeastern New South Wales (Fig. 143)

Etymology. Species name refers to the extremely small size of the species (Latin, *piccolo* = tiny).

***Habronestes pictus* (L. Koch, 1865)**

Figs. 67, 92, 93, 108, 133–135, 143

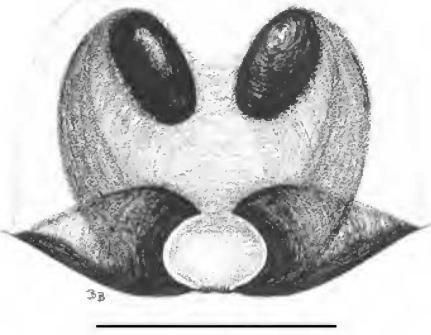
Enyo picta L. Koch, 1865: 861 (description female).

Habronestes pictus.—L. Koch, 1872: 311 T XXV figs. 3, 3a–c (description female); Jocqué, 1995: 143.

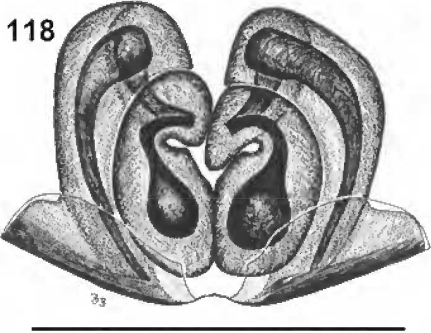
Storena picta.—Simon, 1893: 427.

Remarks. *Habronestes pictus* is the earliest known *Habronestes* species, described as *Enyo picta* by L. Koch (1865). The holotype of *Enyo picta* L. Koch is mentioned in Jocqué (1995) as lost. Dr Gisela Rack with R. Raven rediscovered the specimen in 1998 in the collection of

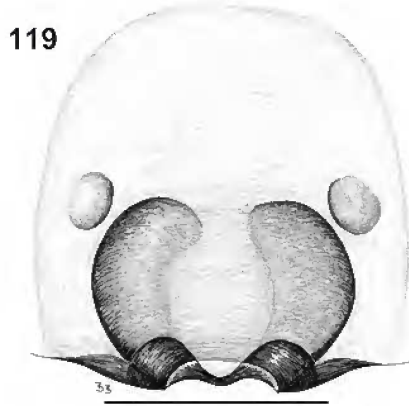
117



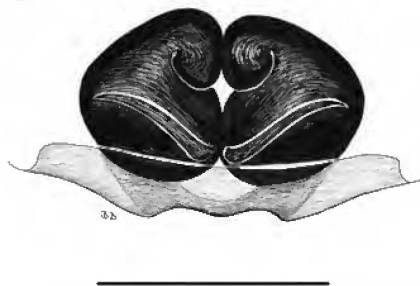
118



119



120



Figs. 117–120. *Habronestes pictus* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (117, 118) *H. monocornis* n.sp.; (119, 120) *Habronestes raveni* n.sp. Scales 0.5 mm.

Zoologisches Museum Hamburg as a part of the Godeffroy Collection. It is the same female from Wollongong, NSW, described as *Enyo picta* by L. Koch in 1865 and as *Habronestes pictus* by L. Koch in 1872 (Fig. 133).

Type material. HOLOTYPE ♀ NSW: Wollongong, Godeffroy expedition (ZMH).

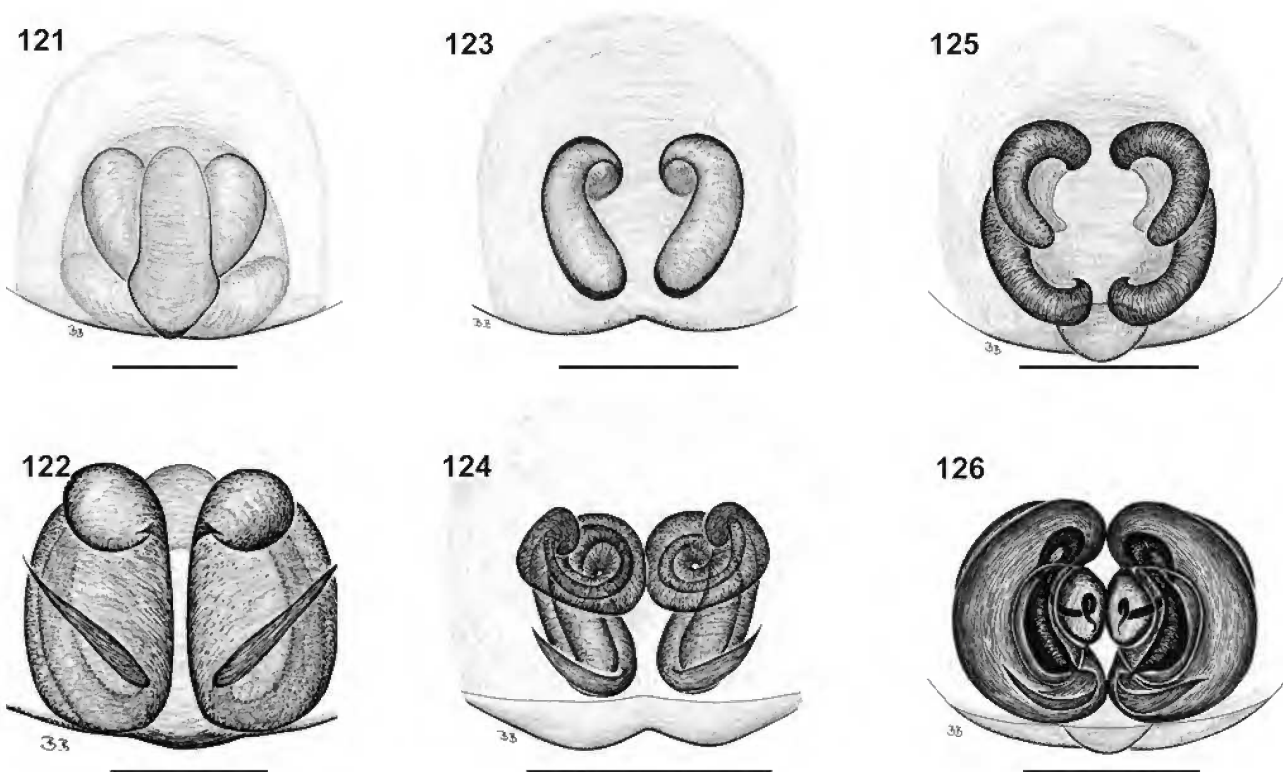
Material examined. NSW: 6♂♂ Tinderry Nature Reserve, northern entrance, 35°37'44"S 149°12'57"E, 14.iii.1999, L. Wilkie, R. Harris & H. Smith, AM KS55869; 2♂♂ Booti Booti NP, 32°16'15"S 152°31'42"E, 25.xi.1997, L. Wilkie, AM KS55956; 3♂♂ 13.xii.1996, AM KS55957; 1♂ Booti Booti NP, 32°14'44"S 152°32'33"E, 14.xii.1996, L. Wilkie, AM KS55963; 1♂ as previous, AM KS56091; 1♂ as previous, 25.xi.1997, AM KS55942; 1♂ Mt Bollard, Tallaganda SF, 35°39'14"S 149°28'44"E, 15.iii.1999, J. Tarnawski & S. Lassau, AM KS55864; 1♀, 2♂♂ Warra SF, 2.8 km W of Moggs Swamp Ck, Moggs Swamp Fire Trl, 29°59'19"S 151°57'14"E, 4.ii–9.iv.1993, 1140 m, G/C, AM KS36359; 3♂♂ Warra SF, Moggs Swamp Ck, Moggs Swamp Fire Trail, 29°58'47"S 151°58'29"E, 4.ii–9.iv.1993, 1080 m, G/C, AM KS36353; 4♂♂ Warra SF, Moggs Swamp Fire Trail, 2.5 km N of Moggs Swamp Ck, 29°57'32"S 151°58'18"E, 4.ii–9.iv.1993, 1170 m, G/C, AM KS36369. ACT: 4♂♂ Tidbinbilla, 35°26'S 148°56'E, 1978, AM KS6242.

Diagnosis. Eyes in 2 rows, both rows procurved, PME and PLE largest. Abdomen with 5 pairs of white patches on top, 3 pairs of elongate patches, 2 pairs of circular and 1 undulating patch in front of spinnerets.

Description. *Male*, AM KS55869. Total length 6.24; carapace 3.04 long, 2.00 wide; 3.2 high; cl/cw 1.52; sternum 1.48 long, 1.28 wide; sl/sw 1.15. Abdomen 3.04 long, 2.00 wide. *Colour.* Carapace, sternum and chelicerae sepia brown, iridescent; maxillae, labium sepia brown, distally white. Abdomen sepia brown, iridescent; with 5 pairs of white patches on top, 3 pairs long, 2 pairs circular and 1 undulating patch in front of spinnerets; laterally with 1 undulating, horizontal white stripe; ventrally, 1 longitudinal white stripe from epigastric fold to near tracheal spiracle. Legs yellow; clearly annulated; legs I–IV with white coxa, pro-lateral suture sepia brown, sepia brown trochanter, sepia brown femora and proximal white patch with darker brown lateral stripes on patella and tibia; femur II with proximal 1/3 white and distal 2/3 sepia brown; femora III, IV with proximal 1/2 of femora white and distal 1/2 sepia brown; with darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. PME and PLE largest, subequal. Eye group width 0.50 of headwidth; AME 0.12; ALE 0.12; PME 0.18; PLE 0.20; AME–AME 0.04; AME–ALE 0.04; ALE–PLE 0.04; PME–PME 0.12; PME–PLE 0.12. MOQ: AME–PME 0.56; AME–AME 0.28; PME–PME 0.48. *Clypeus & chilum.* Clypeus 0.84 high; chilum divided. *Legs.* Length formula 4123. *Male palp* (Figs. 92, 93, 108). RCF deep, almost running the entire cymbium length. LTA with long vertical stalk and irregular horizontal plate; DTA with flattened stalk; VTA long, with sharp tip. Tibia short; DTiA 1.5 as long as tibia, hooked; VTiA (Fig. 93).

Female (paratype AM KS36359). Total length 7.52; carapace 3.36 long, 2.36 wide; 1.68 high; cl/cw 1.42; sternum 1.48 long, 1.48 wide; sl/sw 1.00. Abdomen 4.16 long, 3.00 wide. *Colour.* As in male. *Eyes.* Eye group width 0.50 of headwidth; AME 0.12; ALE 0.12; PME 0.20; PLE 0.20; AME–AME 0.06; AME–ALE 0.06; ALE–PLE 0.09; PME–PME 0.14; PME–PLE 0.12. MOQ: AME–PME 0.6; AME–AME 0.30; PME–PME 0.54. *Clypeus* 0.84 high. *Epigyne* (Figs. 133–135). With undulate posterior margin and undulate plate. Copulatory ducts anteriorly visible through the tegument. Vulva with long, spiralled copulatory ducts ending in pear-shaped, touching spermathecae.

Distribution. Northeastern New South Wales and ACT (Fig. 143).



Figs. 121–126. *Habronestes pictus* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (121, 122) *Habronestes piccolo* n.sp.; (123, 124) *Habronestes wilkiei* n.sp.; (125, 126) *Habronestes minor* n.sp. Scales 0.25 mm.

***Habronestes raveni* n.sp.**

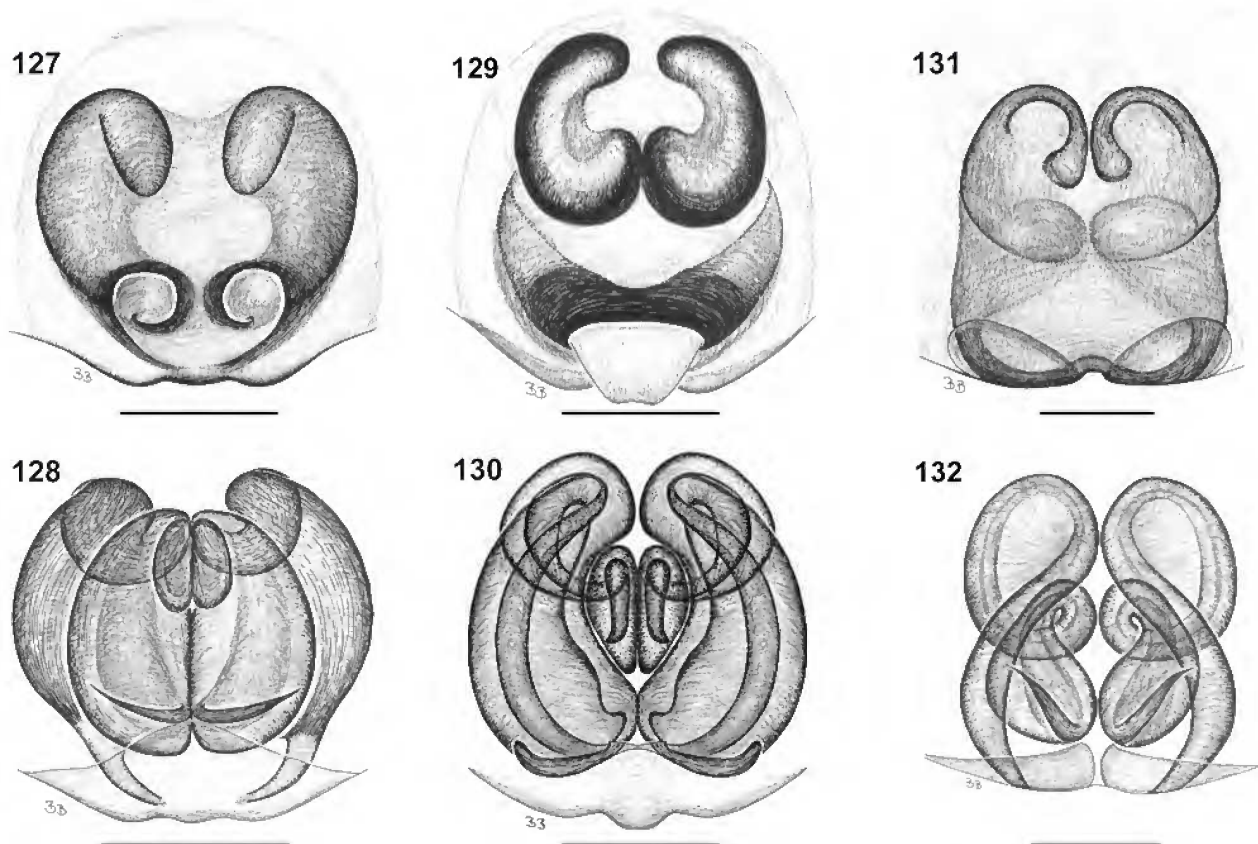
Figs. 57, 78, 79, 109, 119, 120, 143

Type material. HOLOTYPE ♂: NSW, Tinderry Nature Reserve, southern entrance, 35°39'39"S 149°12'43"E, 14.iii.1999, J. Tarnawski & S. Lassau, AM KS55892. PARATYPES: NSW: 2♂♂ 0.5 km from Wheatley Ck Rd on Camp Ck Rd, leasehold land, 28°47'0"S 152°19'29"E, 4.ii–9.iv.1993, 550 m, G/C, AM KS36269; 1♂ as previous, AM KS56173; 1♂ East Kunderang Trail, 1.35 km E of West Kunderang Trail, 30°48'41"S 152°2'55"E, 4.ii–9.iv.1993, 890 m, G/C, AM KS39163; 31♂♂ Kunderang Trail, 1.2 km from homestead, 30°49'12"S 152°8'3"E, 4.ii–9.iv.1993, 210 m, G/C, AM KS39167; 1♀, 1♂ Kunderang Trail, 1.85 km from homestead, 50 m S of Wonga Gully, 30°48'56"S 152°7'44"E, 4.ii–9.iv.1993, 210 m, G/C, AM KS39029; 3♂♂ as previous, AM KS39165; 7♂♂ Kunderang Trail, 3.45 km from homestead, 30°48'29"S 152°7'7"E, 4.ii–9.iv.1993, 280 m, G/C, AM KS39138; 13♂♂ NE facing slope above Kunderang Stn Ck, 30°48'26"S 152°6'26"E, 4.ii–9.iv.1993, 410 m, G/C, AM KS39166; 1♂ Pulletop, 34°0'6"S 146°5'10"E, 24–28.ii.1999, DD, QM S50994; 1♀, QM S50995; 4♂♂ Ramornie SF, track off Mt Tindal Rd, 29°42'38"S 152°38'9"E, 4.ii–9.iv.1993, 200 m, G/C, AM KS39137; 2♂♂, AM KS55965; 7♂♂ Richmond Range SF, Wattle Ck Rd, 28°38'42"S 152°46'29"E, 4.ii–9.iv.1993, 220 m, G/C, AM KS36062; 1♂ Scotts Main Range, 33°56'S 150°18'E, with nest, AM KS50421; 9♂♂ Second gully N of Wonga Gully, 30°48'39"S 152°7'26"E, 4.ii–9.iv.1993, 270 m, G/C, AM KS39164; 1♀, 6♂♂ Taleeban Woodland, 33°56'29"S 146°25'8"E, 23–27.ii.1999, DD, QM S50913; 2♀♀, 3♂♂, QM S51006; 1♂, QM S52129; 1♀, 5♂♂, QM S52133; 2♂♂ Ungarie SF, 33°39'44"S 147°4'6"E, 25.iii.1996, *Callitris* forest F2 trap B2, 21–28 Mar 1996, D. Smith & R. Harris, AM KS49594; 1♀ Boundary Creek SF, 29°56'48"S 152°33'27"E, 9.iv.1993, 4.ii–9.iv.1993, 600 m, G/C, AM KS56170.

Diagnosis. Eyes in circular group around AME; AME smallest, other eyes equal. Abdomen with 3 pairs of white patches on anterior part and 2 or 3 patches in front of spinnerets.

Description. *Male* (holotype). Total length 5.72; carapace 2.84 long, 2.20 wide; 1.24 high; cl/cw 1.29; sternum 1.52 long, 1.24 wide. Abdomen 2.88 long, 2.04 wide. *Colour.* Carapace and chelicerae sepia brown; sternum orange brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 3 irregular pairs of white patches on anterior part and 3 patches in front of spinnerets; laterally with 2 long white stripes equal in length; ventrally pink brown. Legs medium brown; clearly annulated; legs I, II with white coxa, distal angles sepia brown, sepia brown trochanter, sepia brown femur, darker brown lateral stripes on patella and tibia; femora III, IV with proximal 1/3 of white and distal 2/3 sepia brown. *Eyes.* In circular group around AME. AME smallest, other eyes equal. Eye group width 0.55 of headwidth; AME 0.12; ALE 0.18; PME 0.18; PLE 0.18; AME–AME 0.04; AME–ALE 0.08; ALE–PLE 0.06; PME–PME 0.08; PME–PLE 0.12. MOQ: AME–PME 0.48; AME–AME 0.28; PME–PME 0.44. *Clypeus & chilum.* Clypeus 0.6 high; chilum undivided, long. *Legs.* Length formula 4123. *Male palp* (Figs. 78, 79, 109). RCF deep, almost running the entire cymbium length. LTA with a long vertical stalk and with an irregular horizontal plate, bird head shape retrolaterally; DTA with a thin stalk; VTA long, with sharp tip. Tibia short; DTiA as long as ventrolateral one; VTiA (Fig. 79).

Female (paratype QM S52129). Total length 7.00; carapace 3.40 long, 2.44 wide; 1.48 high; cl/cw 1.39; sternum 1.60 long, 1.40 wide; sl/sw 1.14. Abdomen 3.60 long, 3.00 wide. *Colour.* Same as male. *Eyes.* Eye group width 0.55 of headwidth; AME 0.14; ALE 0.20; PME 0.20; PLE 0.20;



Figs. 127–132. *Habronestes pictus* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (127, 128) *Habronestes helenae* n.sp.; (129, 130) *Habronestes grahami* n.sp.; (131, 132) *Habronestes grayi* n.sp. Scales 0.25 mm.

AME–AME 0.04; AME–ALE 0.08; ALE–PLE 0.08; PME–PME 0.12; PME–PLE 0.12. MOQ: AME–PME 0.54; AME–AME 0.32; PME–PME 0.52. Clypeus 0.72 high. *Epigyne* (Figs. 119, 120). Posterior margin undulate, with central opening at posterior margin. Vulva with kidney-shaped, medially touching copulatory ducts ending in globular spermathecae anteriorly.

Distribution. Northeastern to western New South Wales (Fig. 143).

Etymology. Named in honour of Dr Robert J. Raven of the Queensland Museum, in esteem for his important work on Australian spiders.

***Habronestes wilkiei* n.sp.**

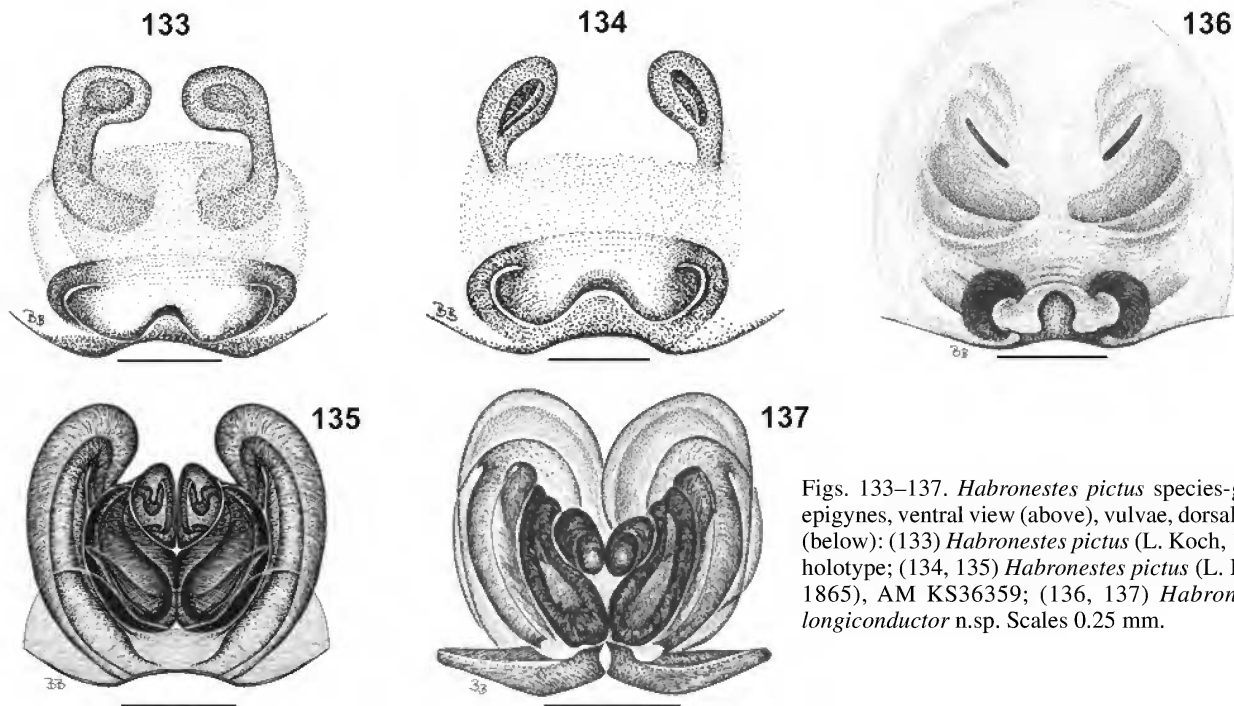
Figs. 63, 82, 83, 105, 123, 124, 143

Type material. HOLOTYPE ♂: NSW, Wyrabalong NP, 33°16'47"S 151°32'40"E, 15.xii.1996, L. Wilkie, AM KS55931. PARATYPES: 1 ♀ Munmorah SRA, 33°12'34"S 151°34'59"E, 17.xi.1996, L. Wilkie, AM KS55951; 3 in AM as previous: 1 ♀ KS55973, 1 ♂ KS56137, 1 ♀ KS56138; 4 in AM as previous but coll. 16.xii.1996: 1 ♂ KS56139, 1 ♂ KS56134, 1 ♂ KS56141, 1 ♂ KS56142; 1 ♂ Munmorah SRA, 33°12'26"S 151°34'37"E, 17.xi.1996, L. Wilkie, AM KS55977; 1 ♀ as previous, AM KS56130; 8 as previous: 1 ♀ AM KS55925, 1 ♀ 4 ♂ AM KS56004, 1 ♀ 1 ♂ QM S60829; 1 ♀ Munmorah SRA, 33°13'9"S 151°34'15"E, 17.xi.1996, L. Wilkie, AM KS55975; 1 ♂ as previous, AM KS56125; 3 in AM as previous but coll. 16.xii.1996: 1 ♂ KS56126, 1 ♂, KS56127, 1 ♀, KS56128; 1 ♀, 1 ♂ Wyrabalong NP, 33°16'44"S 151°32'51"E, 15.xii.1996, L. Wilkie, AM KS56153; 2 ♂ in AM as previous: KS56155 and KS56156; 3 as previous but coll. 16.xi.1996: 1 ♂ KS56157, 1 ♀

KS56158, 1 ♀ KS56154; 1 ♀, 1 ♂ Wyrabalong NP, 33°16'48"S 151°32'45"E, 15.xii.1996, L. Wilkie, AM KS56164; 1 ♂ 2.v.1997, AM KS55936; 1 ♀ 27.xi.1997, AM KS55943; 4 in AM as previous: 1 ♂ KS56032, 1 ♀ KS56037, 1 ♂ KS56050, 1 ♀ KS56055; 1 ♀ Wyrabalong NP, 33°16'51"S 151°32'37"E, 16.xi.1996, L. Wilkie, AM KS56165; 1 ♂ 2.v.1997, AM KS55980; 1 ♀, AM KS56030; 1 ♀ 27.xi.1997, AM KS55923; 1 ♂, AM KS56053; 1 ♂, AM KS56054.

Diagnosis. Eyes in 2 rows, both rows procurved, AME smallest, other eyes equal. One of the 3 smallest species, with 2 pairs of white patches on anterior part of abdomen and 1 or 2 patches in front of spinnerets, differs from *H. piccolo* and *H. minor* by shape of DTA and LTA.

Description. *Male* (holotype). Total length 3.04; carapace 1.60 long, 1.12 wide; 0.56 high; cl/cw 1.42; sternum 0.80 long, 0.76 wide; sl/sw 1.05. Abdomen 1.44 long, 1.00 wide. *Colour.* Carapace sepia brown; sternum yellow brown; chelicerae medium brown; maxillae and labium pale brown, distally white. Abdomen sepia brown with 2 pairs of white patches on anterior part and 1 patch in front of spinnerets; laterally 2 long white stripes, first one broad; ventrally pink brown. Legs yellow brown; clearly annulated; legs I–IV with white coxa, sepia brown trochanter, proximal margin of femora sepia brown, proximal ½ white and distal ½ sepia brown, darker brown lateral stripes on patella and tibia. *Eyes.* In 2 rows each with 4 eyes, both rows procurved. AME smallest, other eyes equal. Eye group width 0.58 of headwidth; AME 0.06; ALE 0.09; PME 0.09; PLE 0.09; AME–AME 0.02; AME–ALE 0.03; ALE–PLE 0.03; PME–PME 0.04; PME–PLE 0.04. MOQ: AME–PME 0.24; AME–



Figs. 133–137. *Habronestes pictus* species-group epigynes, ventral view (above), vulvae, dorsal view (below): (133) *Habronestes pictus* (L. Koch, 1865) holotype; (134, 135) *Habronestes pictus* (L. Koch, 1865), AM KS36359; (136, 137) *Habronestes longiconductor* n.sp. Scales 0.25 mm.

AME 0.14; PME–PME 0.22. *Clypeus & chilum*. Clypeus 0.28 high; chilum undivided, short. *Legs*. Length formula 4123. *Male palp* (Figs. 82, 83, 105). Cymbium RCF deep, almost running the entire cymbium length. LTA with a thick, short, vertical stalk and with irregular horizontal plate, birdhead shape retrolaterally; DTA with a thin stalk; VTA long, with rounded tip. Tibiae short; DTiA with chitinous rim, as long as VTiA (Fig. 83).

Female (paratype AM KS55925). Total length 3.76; carapace 1.72 long, 1.16 wide; 0.72 high; cl/cw 1.48; sternum 0.80 long, 0.76 wide; sl/sw 1.05. Abdomen 2.04 long, 1.52 wide. *Colour*. Same as male. *Eyes*. Eye group width 0.60 of headwidth; AME 0.06; ALE 0.09; PME 0.09; PLE 0.09; AME–AME 0.04; AME–ALE 0.03; ALE–PLE 0.04; PME–PME 0.06; PME–PLE 0.06. MOQ: AME–PME 0.26; AME–AME 0.16; PME–PME 0.24. Clypeus 0.28 high. *Epigyne* (Figs. 123, 124). With sausage-like spermathecae in heart-shaped pattern visible through the tegument. Vulva with anteriorly curled copulatory ducts ending in long separated sausage-like spermathecae.

Distribution. Northeastern New South Wales (Fig. 143).

Etymology. Species name is a patronym in honour of Mr Lance Wilkie, who collected the holotype.

Discussion

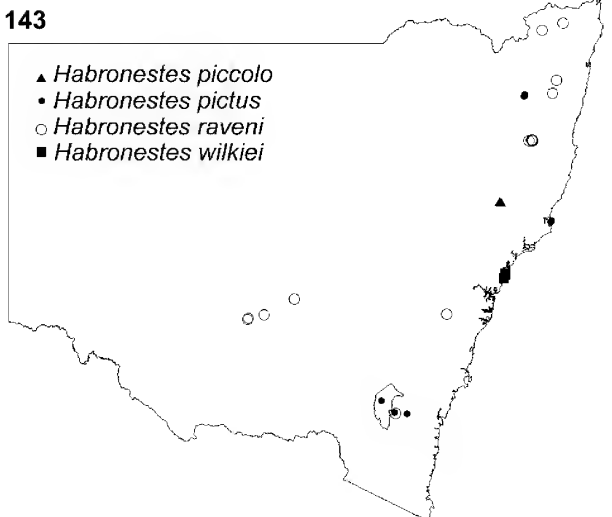
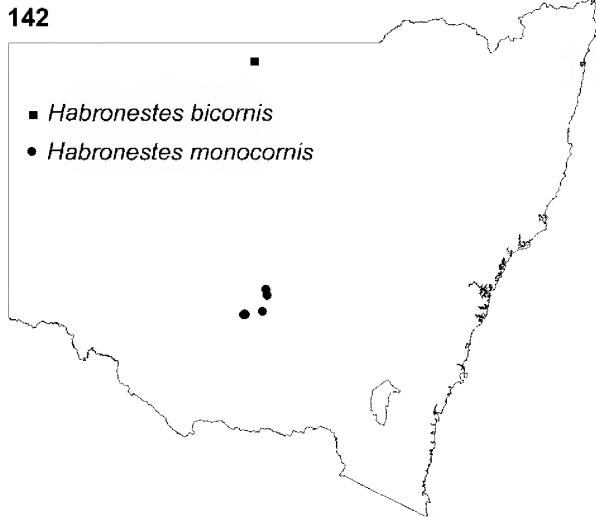
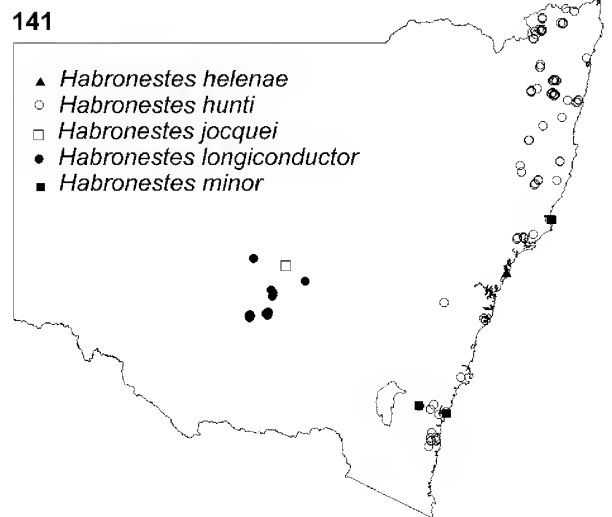
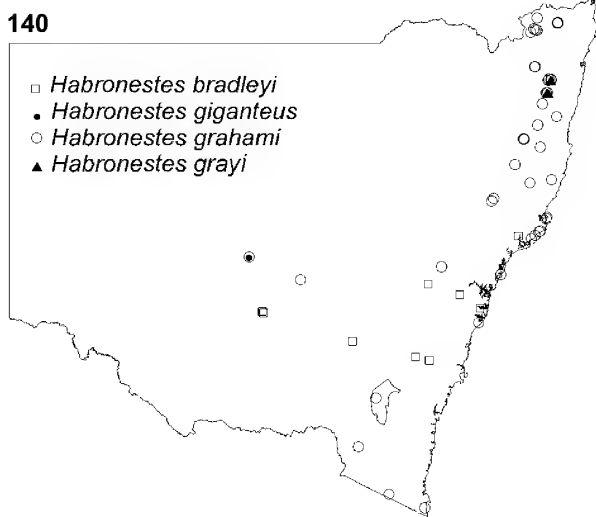
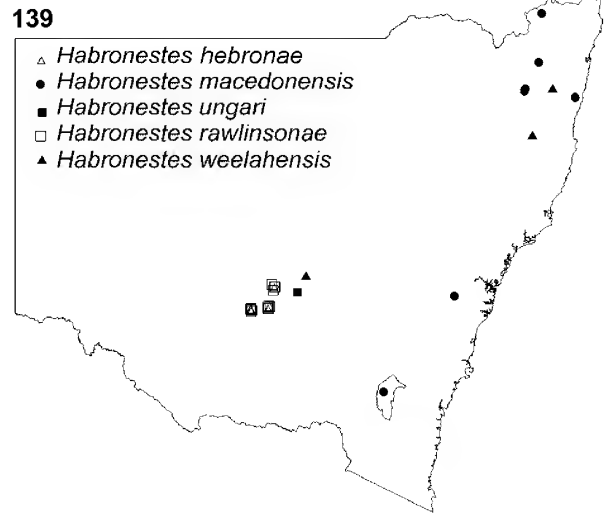
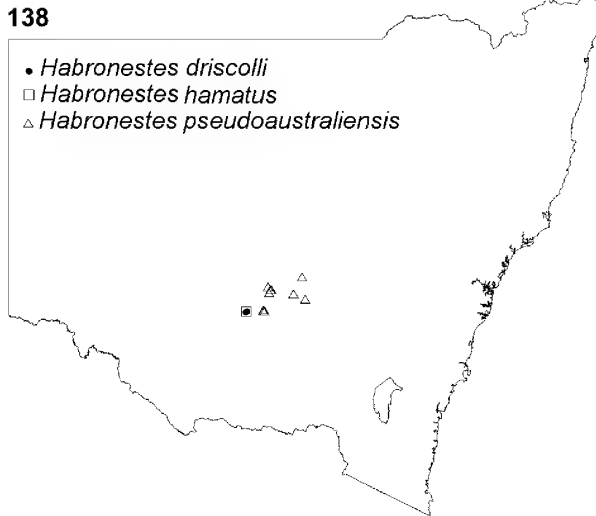
The definition of Australian zodariid genera has been based mainly on genitalic characters (Baehr & Jocqué, 2001). Epigynes are less informative, mainly because there are no unique apomorphies recognized yet. In *Habronestes*, as well as in other genera of zodariids, male palps therefore remain the main characters to define the genera as well as the species. This is the first part of an ongoing revision of the genus *Habronestes*, which now contains 28 species. All uniquely share the retrolateral cymbial fold (RCF), the sickle-shaped VTA and the DTA with long stalk and curled apical end covered with spicules (Figs. 1–6) in male palp. In addition, all possess 2 lines of short, ventral spines on tarsi I–IV, a distoventral preening brush on metatarsi II, III and long, strong spines on tibiae and metatarsi III and IV. The lines of tarsal spines have not been reported elsewhere in the Zodariidae and I suggest they constitute a further synapomorphy of *Habronestes*. However, the abdominal pattern—2–5 pairs of white patches on top, and 1–3 patches in front of spinnerets on dark brown abdomen—occur also in other genera such as *Asteron* and *Storena*.

This is the first time that *Habronestes* has been broken up into species groups. The three species groups here recognized are founded on somatic characters—different eye sizes, cephalic profile, spination—that show some congruence with genitalic characters. Synapomorphies for the three species-groups are:

Habronestes australiensis species-group: Carapace raised in eye region. Eyes, PLE largest, 2–3× AME.

Habronestes macedonensis species-group: Carapace not raised in front; highest point just behind eye region. AME largest, eyes in 2 rows, both rows procurved. Femora III, IV with a row of 3–6 stout dorsal spines at distal end; patella III, IV with 1 irregular longitudinal row of stout spines prolaterally.

Habronestes pictus species-group: Carapace not raised in front; AME or PME never largest eyes. Eyes in 2 rows,



Figs. 138–143. New South Wales, showing collection localities: (138) species of *Habronestes australiensis* species-group; (139) species of *Habronestes macedonensis* species-group; (140–143) species of *Habronestes pictus* species-group.

both rows procurved or in circular group. All eyes nearly equal sized or AME smallest.

Nevertheless, similar male palps with extremely bent cymbium and enlarged retrolateral cymbial fold reaching the tip of cymbium occur in both the *H. australiensis* (*H. driscollii*) and *H. pictus* (*H. longiconductor*, *H. giganteus*) species-groups. To conclude that these similarities are synapomorphic would require considerable homoplasy in the somatic characters. In the *Asteron* complex (Baehr & Jocqué, 1996) similar extremely bent palps are found in several undescribed genera (B. Baehr, pers. obs.). Jocqué (1998) found that, in a number of spider genera, male palps increase in complexity in different species within the same genus. Examples of this have appeared many times in the course of the evolution of the palp. In any case, these palpal characters are an excellent demonstration of evolution within species-groups in *Habronestes*. I suggest that for at least the *H. australiensis* and *H. pictus* species-groups, the plesiomorphic condition is: palps with straight spoon-shaped cymbium and embolus with prolateral or basal origin. The derived condition is: palps with extremely bent cymbium and embolus with retrolateral origin on tegulum. It is unknown whether the derived condition is also present in the *H. macedonensis* species-group, as only the NSW species have been examined.

In contrast to the *Asteron*-complex, the genus *Habronestes* can be considered monophyletic, with its synapomorphies in the male palp: presence of RCF, well-developed LTA with stalk and plate, long sickle-shaped VTA and DTA with a thin long stalk and a curled end covered with spicules, long thin semicircular embolus. The phylogenetic relationships of the zodariid genera are still unknown. However, there are some obvious characters that suggest where the genus *Habronestes* fits. The putative sister group is *Leptasteron*, in which males can be recognized by the enormous DTA with stalk and a large terminal folded part, the very long bent VTA and the long whip-like embolus (Baehr & Jocqué, 2001, figs. 11D,E). These characters also occur in *Habronestes* but they are further derived with special synapomorphic shapes. According to this, *Habronestes* is a monophyletic genus in the paraphyletic *Asteron*-complex.

Further research is necessary to describe all species of the genus *Habronestes*. These investigations will provide detailed distribution patterns of each *Habronestes* species. Additional data will yield more information about the relationship between species and species groups and the origin of the genus *Habronestes* in Australia.

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